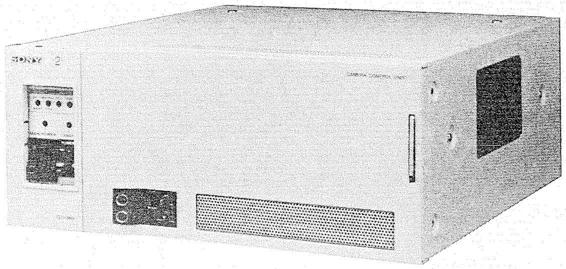
CAMERA CONTROL UNIT

CCU-360P



OPERATION AND MAINTENANCE MANUAL
1st Edition (Revised 6)
Serial No. 30001 and Higher

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SECTION 1
OPERATION

The CCU-360P camera control unit processes the signal picked up by the BVP-360P color video camera. The camera contol unit of this camera system is designed to be separated into two units, the signal processing unit and the control unit. The BKP-3601 camera control panel is used as the control unit. The camera control panel can be attached to the CCU-360P to use the units as one. The units can also be installed in separate places for remote control of the signal. The system can therefore be used in a wide variety of situations.

1-1. FEATURES

Variety of video inputs and outputs

Four VBS outputs are available, and the signal from one of them can be changed to a VB signal. R, G, and B signals for chroma keyer, Y, R-Y and B-Y signals for the Betacam system, and the output signals for a waveform monitor and a picture monitor are also available.

With respect to input signals, two return video signals and a video signal for tele-prompter are acceptable. Mixing of the return video and camera signals is also possible.

External sync function

The system can be locked with an external reference signal. The VBS (or BS) signal, or SYNC/SC/PAL PULSE signal selected by the built-in switch can be used as a reference signal.

Built-in color bar generator

A built-in color bar generator generates the 75% or 95% color bar signals selected by the built-in switch.

Test mode

The test mode for the CCU is provided so that operation check and maintenance can be performed easily.

Built-in encoder

The encoder is provided to control contrast and saturation. It is controlled by the control panel.

Power supply unit designed for safety in operation

When a triaxial cable is connected, low-voltage power of 30V dc is supplied to check that the camera is correctly connected, then the specified voltage of 240V ac is supplied. Alarm lamps to indicate open/short of a cable and abnormal condition of the CCU or control panel are also equipped.

Various audio connections

Two channel microphone outputs and a program audio input are equipped, and two intercom systems can be used simultaneously.

The unit can be applied to both 4W and 2W (RTS or CLEARCOM-TW12) intercom systems.

Plug-in type block configuration

The power block and triax connector box are designed as a plug-in type unit and the printed circuit boards are designed for easy insertion and removal, facilitating maintenance.

Separate type control panel

The BKP-3601 camera control panel, which controls the function of the BVP-360P and CCU-360P, can be attached to the CCU-360P, then the CCU can control the camera as a complete camera control unit. The panel can also be installed in a separate place so that remote control is possible.

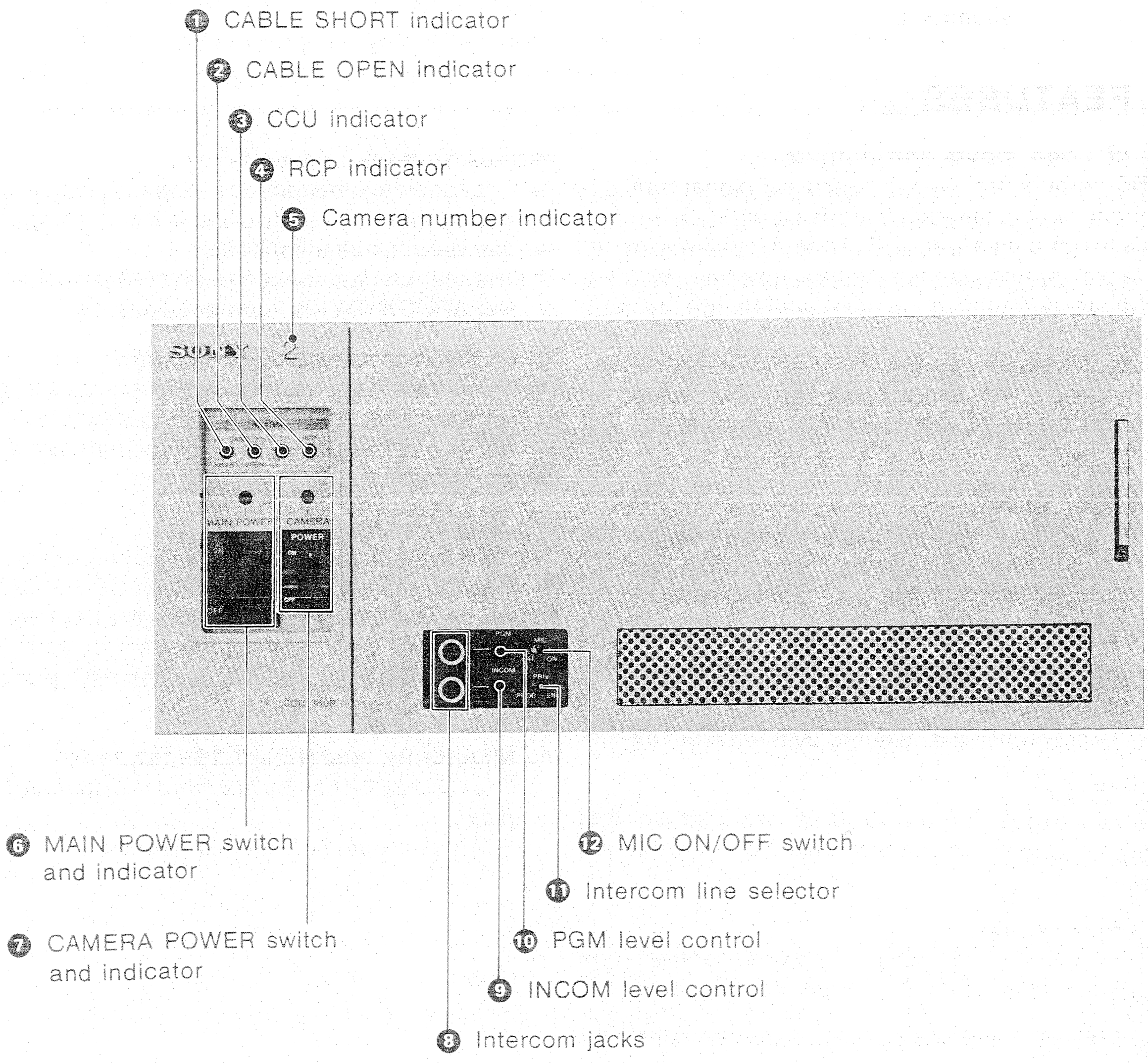
Mountable in standard 19-inch rack

The CCU-360P can be mounted in a standard 19-inch rack.

For rack mounting, refer to Section 2.

1-2. LOCATION AND FUNCTION OF PARTS AND CONTROLS

1-2-1. Front Panel



① CABLE SHORT indicator
② CABLE OPEN indicator
③ CCU indicator
④ RCP indicator
⑤ Camera number indicator
SONY
2
MAIN POWER
CAMERA
POWER
ON
OFF
PGM
INCOM
MIC
ON
PRIV
⑥ MAIN POWER switch and indicator
⑦ CAMERA POWER switch and indicator
⑫ MIC ON/OFF switch
⑪ Intercom line selector
⑩ PGM level control
⑨ INCOM level control
⑧ Intercom jacks

❶ **CABLE SHORT indicator***
Lights to indicate that over current is flowing in the triaxial camera cable or that some part in the unit is short circuited.

❷ **CABLE OPEN indicator***
Lights to indicate that no triaxial cable is connected to the CAMERA TRIAX connector on the rear panel or that no camera is connected.

❸ **CCU indicator***
Lights to indicate that there is some fault such as a drop in voltage due to short-circuit in the power block of the CCU-360P.

❹ **RCP (remote control panel) indicator***
Lights to indicate that there is some fault in the power supply to the BKP-3601 camera control panel or a remote control panel such as the RCP-3631, 3621, 3620.

❺ **Camera number indicator**
Attach the number plate (supplied) corresponding to the number of the connected camera.

❻ **MAIN POWER switch and indicator**
The power supply to all units of the camera system of the BVP-360P such as the BVP-360P color video camera, CCU-360P camera control unit, BKP-3601 camera control panel and remote control panel, is turned on and off by this switch. When the power is turned on, the associated indicator lights.

❼ **CAMERA POWER switch and indicator**
When the MAIN POWER switch is set to ON and the camera power button on the camera control panel or the remote control panel is lit, the power supply to the camera head can be turned on and off.

❽ **Intercom jacks** (double jacks)
Connect a headset with the double plugs. The upper jack is for program audio and the lower jack is for intercom.

❾ **INCOM (intercom) level control**
Adjusts the intercom level.

❿ **PGM (program audio) level control**
Adjusts the program audio level.

⓫ **Intercom line selector**
PROD: To use the producer line
PRIV: To communicate between the camera head and the CCU only. (The engineer line on the rear panel is disconnected.)
ENG: To use the engineer line

⓬ **MIC (microphone) ON/OFF switch**
The microphone of the headset is turned on and off by this switch.

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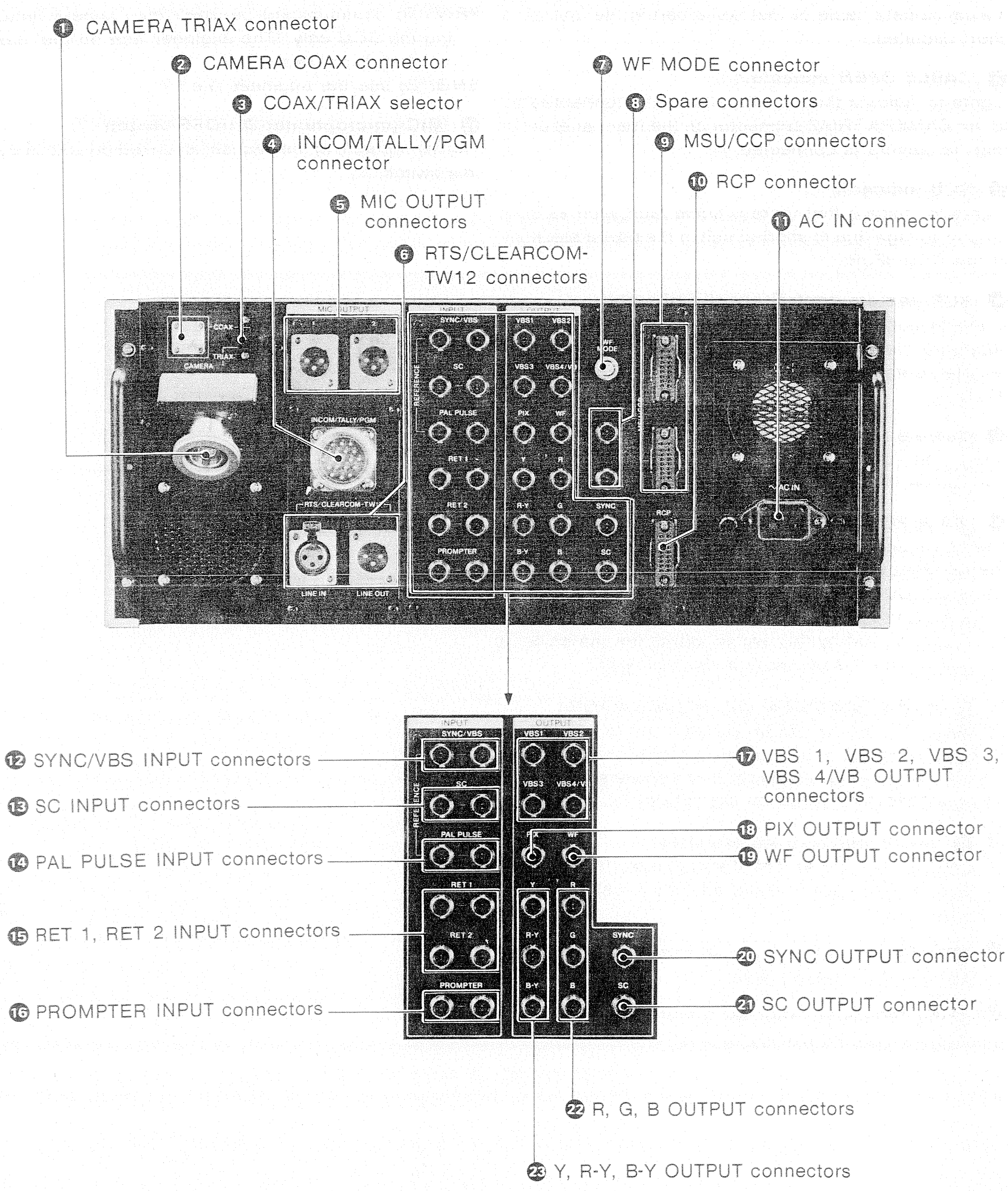
* If one of these indicators is lit, the CCU-360P or control panel does not operate.

1-2-2. Rear Panel


❶ CAMERA TRIAX connector
❷ CAMERA COAX connector
❸ COAX/TRIAX selector
❹ INCOM/TALLY/PGM connector
❺ MIC OUTPUT connectors
❻ RTS/CLEARCOM-TW12 connectors
❼ WF MODE connector
❽ Spare connectors
❾ MSU/CCP connectors
❿ RCP connector
⓫ AC IN connector
COAX
TRIAX
CAMERA
MIC OUTPUT
INCOM/TALLY/PGM
RTS/CLEARCOM-TW12
LINE IN
LINE OUT
INPUT
OUTPUT
REFERENCE
SYNC/VBS
SC
PAL PULSE
RET 1
RET 2
PROMPTER
VBS1
VBS2
VBS3
VBS4/V
PIX
WF
Y
R
R-Y
G
SYNC
B-Y
B
SC
WF MODE
RCP
~AC IN
⓬ SYNC/VBS INPUT connectors
⓭ SC INPUT connectors
⓮ PAL PULSE INPUT connectors
⓯ RET 1, RET 2 INPUT connectors
⓰ PROMPTER INPUT connectors
⓱ VBS 1, VBS 2, VBS 3, VBS 4/VB OUTPUT connectors
⓲ PIX OUTPUT connector
⓳ WF OUTPUT connector
⓴ SYNC OUTPUT connector
㉑ SC OUTPUT connector
㉒ R, G, B OUTPUT connectors
㉓ Y, R-Y, B-Y OUTPUT connectors

① **CAMERA TRIAX connector**
Connect a BVP-360P using a triaxial cable. The power, control signal, video signal, audio signal, etc. are connected by a triaxial cable.
There are several types of triaxial connectors. The unit can be used with any type of connector simply by changing the connector block.

② **CAMERA COAX connector**
Connect to the coaxial connector on the BVP-360P camera head by using a coaxial cable. All signals except for the power can be connected by a coaxial cable.
When the camera head is connected using this connector, the power should be supplied to the camera head from a power supply unit.

③ **COAX/TRIAX selector**
Set to the appropriate position according to the connector used for connecting the camera head.
COAX: when a CAMERA COAX connector is used
TRIAX: when a CAMERA TRIAX connector is used

④ **INCOM/TALLY/PGM (intercom/tally/program audio) connector** (19-pin)
The intercom, tally and program audio signals are connected by this connector. Connect to the intercom/tally/program audio connector on the control console or intercom system.

⑤ **MIC OUTPUT connectors** (XLR 3-pin)
The signals picked up by the microphones of the camera head are output.

⑥ **RTS/CLEARCOM-TW12 connectors** (XLR 3-pin)
These are the connectors for the RTS or CLEARCOM-TW12 intercom system.

⑦ **WF MODE (waveform monitor mode) connector** (4-pin)
Connect to a Tektronix waveform monitor to monitor the signals in sequential mode. When the SEQ button on the BKP-3601 camera control panel is pressed, the staircase signal is output here, and the R, G and B signals can be monitored simultaneously in sequential mode.

⑧ **Spare connectors** (BNC type)
These are spare connectors and nothing is connected.

⑨ **MSU/CCP (master setup unit/camera control panel) connectors** (16-pin)
Connect the MSU-360 master setup unit (optional) using a CCA-2 connecting cable or the BKP-3601 camera control panel (optional) using a CCA-1 connecting cable. The control signals are connected through this connector. When the BKP-3601 is connected, the power is also supplied to the BKP-3601.
Both connectors have a loop-through configuration. When the MSU-360 is connected to either of these connectors, two or more CCU connected by bridge connection can be controlled by the MSU-360 simultaneously.

⑩ **RCP (remote control panel) connector** (16-pin)
Connect the RCP-3600 series remote control panel such as the RCP-3631, 3621, 3620, using a CCA-2 connecting cable. The power and the control signals are connected.

⑪ **AC IN connector**
Connect to an ac power source using the supplied power cord.

⑫ **SYNC/VBS INPUT connectors** (BNC type)*
Connect a reference sync signal (SYNC or VBS) for the external sync. When the SYNC signal is connected, the reference subcarrier signal should be connected to the SC INPUT and PAL PULSE INPUT connectors, but when the VBS signal is connected, the subcarrier and PAL pulse signals need not be connected.

⑬ **SC (subcarrier) INPUT connectors** (BNC type)*
Connect a reference subcarrier signal for the external sync.
When the SYNC signal is connected to the SYNC/VBS INPUT connector, be sure to connect a reference subcarrier signal here.

⑭ **PAL PULSE INPUT connectors** (BNC type)*
When the SYNC signal is connected to the SYNC/VBS INPUT connector, connect the PAL pulse signal for the external sync.

⑮ **RET 1, RET 2 (return video 1, 2) INPUT connectors** (BNC type)*
The return video signals from two different systems can be connected here. The RET 1 or RET 2 signal is selected by the buttons on the BVP-360P.

⑯ **PROMPTER INPUT connectors** (BNC type)*
Connect the signal for the teleprompter. When a prompter monitor is used, the BKP-3602 and BKP-3603 prompter board kits (optional) are required.

⑰ **VBS 1, VBS 2, VBS 3, VBS 4/VB OUTPUT connectors** (BNC type)
The signal picked up by the camera head is output as the composite video signal (VBS). The output signal from the VBS 4 connector can be changed to the VB signal by the switch on the built-in VA board. (For details, refer to Section 2 and following.)

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* All input connectors have a loop-through configuration so that bridge connection can be made. When these connectors are used, be sure to terminate by 75 ohms.

⑱ **PIX (picture monitor) OUTPUT connector** (BNC type)

The video signal for a picture monitor is output here. The signal selected by the PICTURE MONITOR SELECT buttons on the BKP-3601, etc. is supplied.

⑲ **WF (waveform monitor) OUTPUT connector** (BNC type)

The video signal for a waveform monitor is output here. The signal selected by the WAVEFORM MONITOR SELECT buttons on the BKP-3601, etc. is supplied.

⑳ **SYNC OUTPUT connector** (BNC type)

The sync signal (2 Vp-p, 75 ohms) generated by the built-in sync generator is output here. Connect to the sync signal input connector on the waveform monitor, picture monitor, etc.

㉑ **SC (subcarrier) OUTPUT connector** (BNC type)

The subcarrier signal (1 Vp-p, 75 ohms) generated by the built-in sync generator is output here. Use this signal for locking a vectorscope, etc. to an external signal.

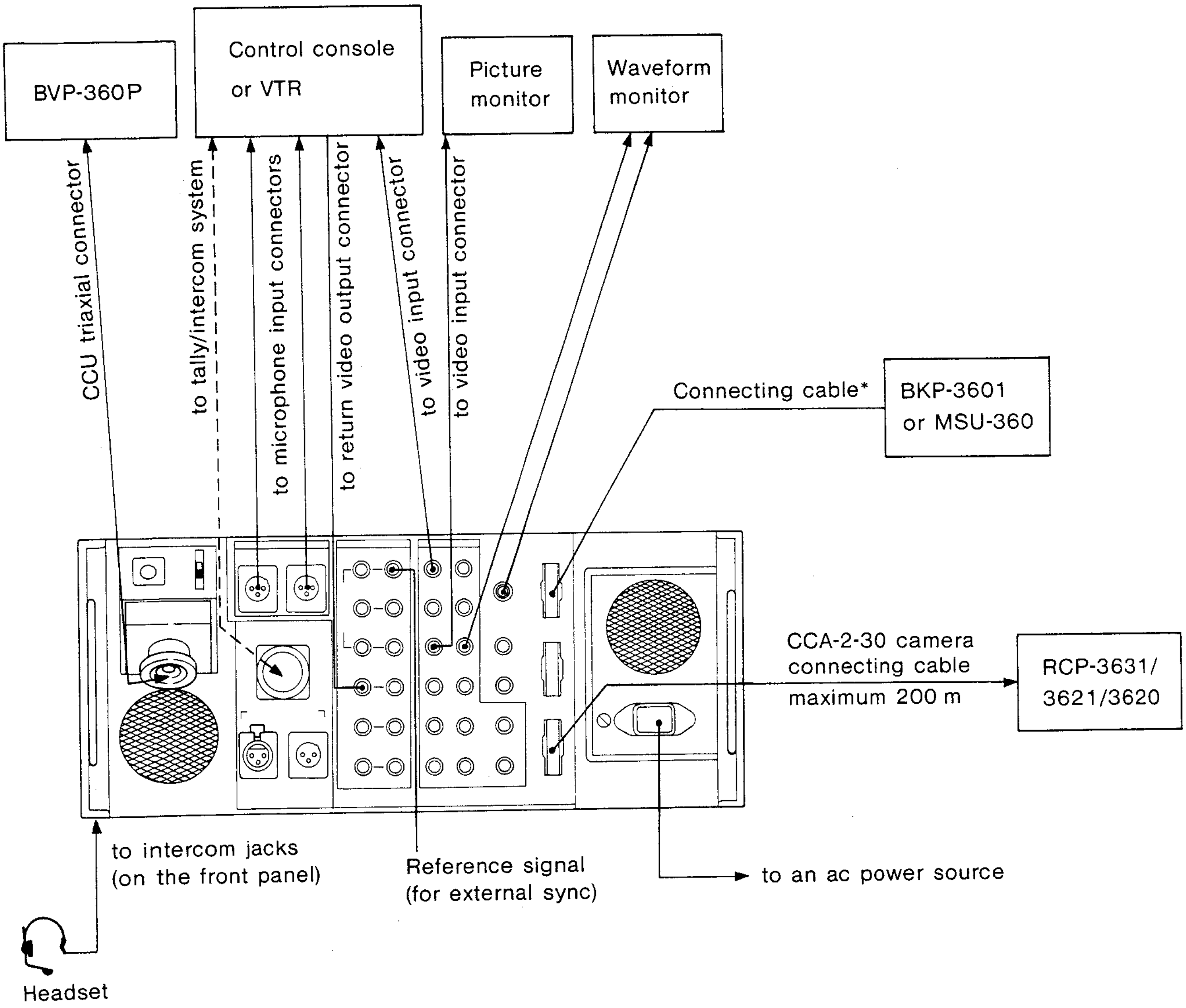
㉒ **R, G, B OUTPUT connectors** (BNC type)

The R, G and B signals for the chroma keyer are output from the corresponding connector.

㉓ **Y, R-Y, B-Y OUTPUT connectors** (BNC type)

The Y, R-Y, and B-Y signals are output from the corresponding connectors. Connect to a Betacam series VTR, digital VTR, etc.

1-3. CONNECTIONS


BVP-360P
Control console or VTR
Picture monitor
Waveform monitor
CCU triaxial connector
to tally/intercom system
to microphone input connectors
to return video output connector
to video input connector
to video input connector
Connecting cable*
BKP-3601 or MSU-360
CCA-2-30 camera connecting cable maximum 200 m
RCP-3631/ 3621/3620
to intercom jacks (on the front panel)
Reference signal (for external sync)
to an ac power source
Headset

* When the BKP-3601 is used, connect the unit using the CCA-1-15 camera connecting cable. The cable can be extended up to 15 meters. When the MSU-360 is used, connect the unit using the CCA-2-30 camera connecting cable. The cable can be extended up to 300 meters.

- When the unit is installed in the rack, use the RMM-3601 rack mount metal (optional). (For details, refer to Section 2 and following.)

1-4. SPECIFICATIONS

Power sources	240V ac ±10% (100/120/220V ac selectable) 50/60 Hz
Power consumption	350 VA
Connectors	VBS 1, VBS 2, VBS 3, VBS 4/ VB OUTPUT: BNC type, 1 each VBS 1.0V (p-p), 75 ohms (The signal from the VBS 4 connector can be changed to VB.) R, G, B OUTPUT: BNC type, 1 each Video, 0.7V (p-p), 75 ohms Y, B-Y, R-Y OUTPUT: BNC type, 1 each Y 1V (p-p), 75 ohms B-Y 0.7V (p-p), 75 ohms R-Y 0.7V (p-p), 75 ohms PIX OUTPUT: BNC type, 1 1.0V (p-p), 75 ohms WF OUTPUT: BNC type, 1 0.7V (p-p), 75 ohms SYNC OUTPUT: BNC type, 1 2V (p-p), 75 ohms, negative polarity SC OUTPUT: BNC type, 1 1V (p-p), 75 ohms WF MODE: 4-pin, 1 MIC OUTPUT 1, 2 XLR 3-pin, male, 1 each 0 dB/−20 dB selectable by the switch on the AU board SYNC/VBS INPUT: BNC type, 2 SYNC 2V (p-p), 75 ohms or VBS 1.0V (p-p), 75 ohms SC INPUT: BNC type, 2 1V (p-p), 75 ohms PAL PULSE: BNC type, 2 2V (p-p), 75 ohms RET 1, RET 2 INPUT: BNC type, 2 each 1V (p-p), 75 ohms PROMPTER INPUT: BNC type, 2 each 1V (p-p) 75 ohms MSU/CCP: 16-pin multi connector, 2 RCP: 16-pin multi connector, 1 INCOM/TALLY/PGM: 19-pin multi connector 1 TALLY 24V dc or contact (selectable) RTS/CLEARCOM-TW12: XLR 3-pin, male and female, 1 each INCOM: double jacks (on the front panel)
Operating temperature	0°C to 45°C (32°F to +113°F)
Dimensions	424 × 177 × 450 mm (w/h/d) (16¾ × 7 × 17¾ inches)
Weight	29 kg (triaxial specified) (63 lb 15 oz)
Accessories supplied	AC power cord (1) Extension board (for CCU-360P) (1) (for triaxial block) (1) 4-pin connector (1) 19-pin connector (1) Number plate (1) Operation and maintenance manual (1)

Design and specifications subject to change without notice.

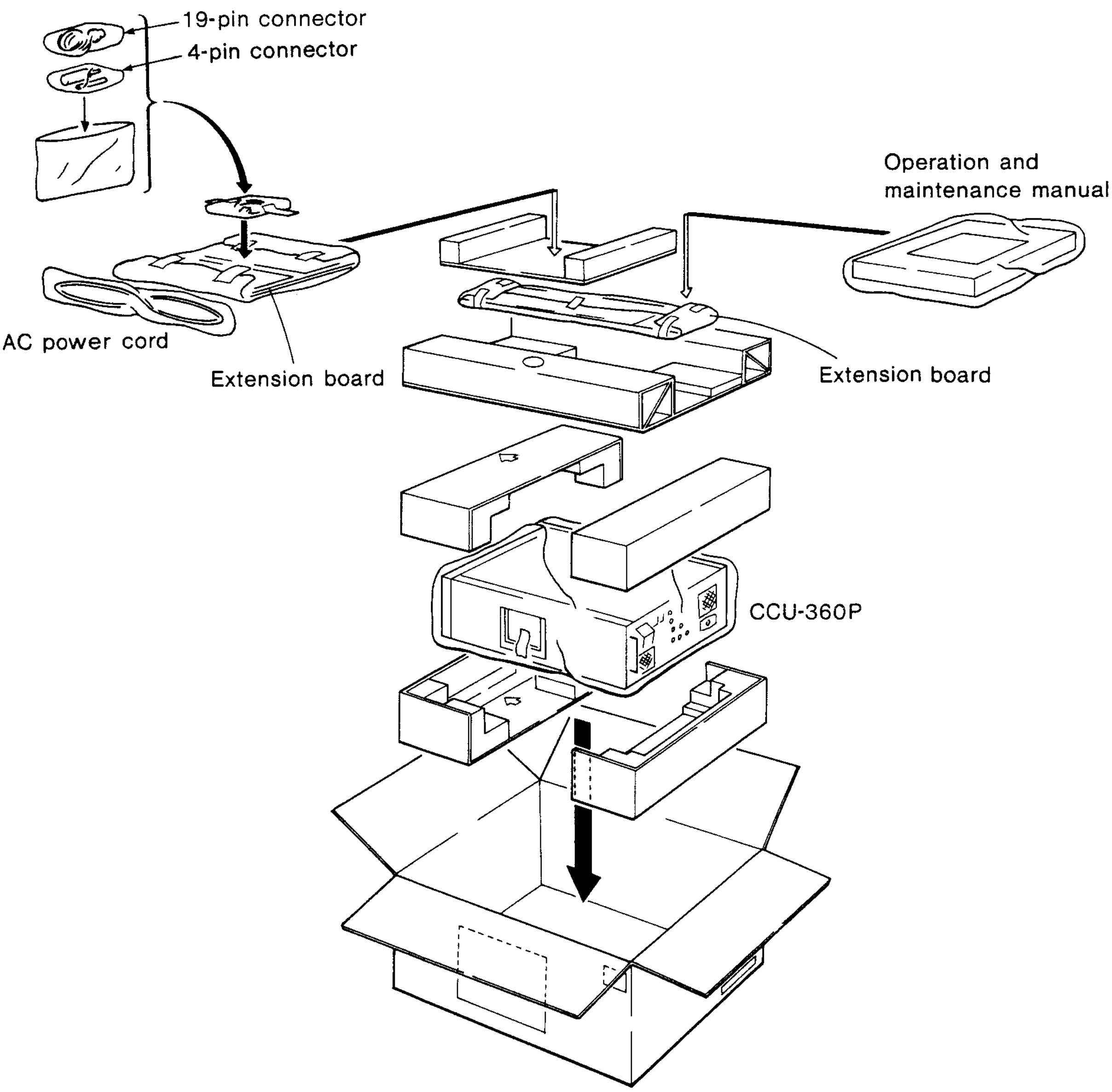
Optional accessories

Triax connector box BKP-3606F
Triax board kit BKP-3607
Triax cable CCT-100
Prompter board kit BKP-3603
Rack mount metal RMM-3601

Recommended equipment

Color video camera BVP-360P
Prompter board kit BKP-3602
Camera control panel BKP-3601
Remote control panel RCP-3631, RCP-3621, RCP-3620
Master setup unit MSU-360

1-5. PACKING


19-pin connector
4-pin connector
Operation and
maintenance manual
AC power cord
Extension board
Extension board
CCU-360P

TEIL 1
BETRIEB

Die Kamera-Steuereinheit CCU-360P dient zur Aufbereitung des von der Farb-Videokamera BVP-360P aufgenommenen Signals. Die Steuerung kann beispielsweise das Kamera-Steuerpult BKP-3601 übernehmen. Dieses kann entweder direkt an der CCU-360P montiert werden, so daß man praktisch ein Gesamtgerät erhält, oder es kann auch an einem beliebigen anderen Ort angebracht werden, um die CCU-360P fernzubedienen. Das System ist damit für verschiedenste Anwendungsbereiche geeignet.

1-1. BESONDERE MERKMALE

Vielfältige Video-Eingänge und -Ausgänge

Vier FBAS-Ausgänge stehen zur Verfügung, wobei ein Ausgang auf FBA umgeschaltet werden kann. Weiterhin können auch R-, G- und B-Signale für einen Chroma-Keyer sowie Y-, R-Y- und B-Y-Signale für ein Betacam-System und Ausgangssignale für Wellenform- und Bildmonitore abgegriffen werden.
Den verschiedenen Eingängen können Rücklaufvideosignale und ein Teleprompter-Videosignal zugeleitet werden. Auch ein Mischen von Rücklauf-Video- und Kamerasignal ist möglich.

Externe Synchronisierung

Das System kann mit einem externen Bezugsignal synchronisiert werden. An einem internen Schalter ist wählbar, ob das FBAS-Signal (bzw. BS-Signal) oder das SYNC/HT/PAL PULSE-Signal als Bezugsignal herangezogen wird.

Eingebauter Farbbalkengenerator

Der eingebaute Farbbalkengenerator kann 75%ige oder 95%ige Farbbalken generieren. Die Umschaltung erfolgt an einem internen Schalter.

Testbetrieb

Die CCU ist mit einer Testfunktion ausgestattet, die den Betrieb und die Wartung wesentlich erleichtert.

Eingebauter Codierer

Der vom Steuerpult aus eingestellte Codierer regelt Kontrast und Sättigung.

Sichere Stromversorgung

Dem Anschluß eines Triaxialkabels wird zur Überprüfung des vorschriftsmäßigen Anschlusses der Kamera zunächst eine Gleichspannung von 30V und erst dann die Betriebsspannung von 240V Wechselspannung zugeleitet. Bei einem Kurzschluß im Kabel oder bei schlechtem Kontakt sowie bei abnormalem Betrieb der CCU oder des Steuerpultes leuchten Warnindikatoren auf.

Verschiedene Audio-Anschlußmöglichkeiten

Neben zwei Mikrofon-Ausgängen und einem Audio-Signaleingang besitzt das Gerät gleichzeitig noch Anschlußmöglichkeiten für zwei Sprechverkehrsysteme. Sowohl 4W als auch 2W (RTS oder CLEARCOM-TW12) Sprechverkehrsysteme können verwendet werden.

Wartungsfreundlicher Aufbau mit einsteckbaren Blöcken

Der Stromversorgungsteil und die Triax-Anschlußbox sind als einsteckbare Blockeinheiten ausgelegt. Auch die Leiterplatten können zur Wartungserleichterung bequem herausgenommen und eingesetzt werden.

Getrenntes Steuerpult

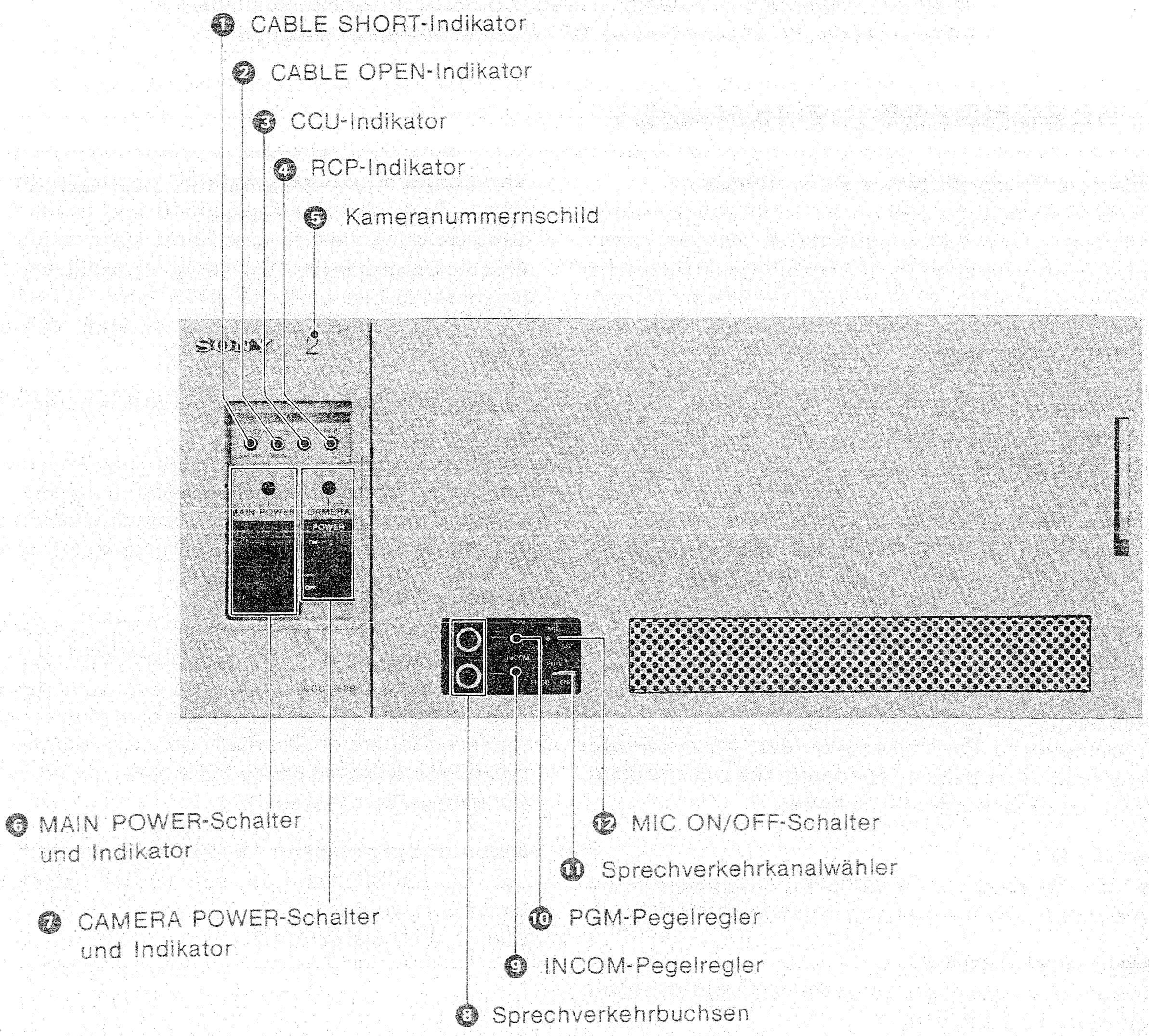
Die Funktionssteuerung des BVP-360P und der CCU-360P erfolgt vom Kamera-Steuerpult BKP-3601 aus. Das Steuerpult kann entweder direkt an der CCU-360P angebracht werden, so daß man eine komplette Kamera-Steuereinheit erhält, oder es kann an einer beliebigen anderen Stelle installiert werden, um die Funktionen fernzusteuern.

Einbaumöglichkeit in 19-Zoll Normgestell

Die CCU-360P kann in ein 19-Zoll Normgestell eingebaut werden.
Zum Einbau siehe Teil 2.

1-2. LAGE UND FUNKTION DER TEILE UND REGLER

1-2-1. Vorderseite


① CABLE SHORT-Indikator
② CABLE OPEN-Indikator
③ CCU-Indikator
④ RCP-Indikator
⑤ Kameranummernschild
SONY
2
MAIN POWER
CAMERA
POWER
CCU-360P
INCOM
⑥ MAIN POWER-Schalter und Indikator
⑦ CAMERA POWER-Schalter und Indikator
⑧ Sprechverkehrbuchsen
⑨ INCOM-Pegelregler
⑩ PGM-Pegelregler
⑪ Sprechverkehrkanalwähler
⑫ MIC ON/OFF-Schalter

❶ CABLE SHORT-Indikator*

Leuchtet auf, wenn auf Grund eines Kurzschlusses ein zu hoher Strom im Triaxial-Kamerakabel fließt.

❷ CABLE OPEN-Indikator*

Leuchtet auf, wenn das Triaxialkabel nicht mit dem CAMERA TRIAX-Anschluß (Rückseite) verbunden ist oder wenn keine Kamera angeschlossen ist.

❸ CCU-Indikator*

Dieser Indikator weist durch Aufleuchten auf eine Betriebsstörung hin. Leuchtet beispielsweise, wenn die Spannung auf Grund eines Kurzschlusses im Stromversorgungsblock der CCU-360P abgefallen ist.

❹ RCP-Indikator*

Dieser Indikator weist durch Aufleuchten auf eine gestörte Stromversorgung zum Kamera-Steuerpult BKP-3601 oder zum Fernsteuerpult (z.B. RCP-3631, 3621, 3620) hin.

❺ Kameranummernschild

Entsprechend der angeschlossenen Kamera kann hier eines der mitgelieferten Nummernschilder angebracht werden.

❻ MAIN POWER-Schalter und Indikator

An diesem Schalter wird die Stromzufuhr zu allen Komponenten des Systems, also z.B. zur Farb-Videokamera BVP-360P, zur Kamera-Steuereinheit CCU-360P, zum Kamera-Steuerpult BKP-3601 und zum Fernsteuerpult ein- und ausgeschaltet. Im eingeschalteten Zustand leuchtet der Indikator auf.

❼ CAMERA POWER-Schalter und Indikator

Steht der MAIN POWER-Schalter auf ON und leuchtet die Kamera-Ein/Aus-Taste des Kamera-Steuerpultes oder des Fernsteuerpultes, so kann mit diesem Schalter die Stromzufuhr zum Kamerakopf ein- und ausgeschaltet werden.

❽ Sprechverkehrbuchsen (Doppelbuchsen)

Zum Anschluß einer Hör-Sprechgarnitur mit zwei Steckern. Die obere Buchse ist für die Audio-Signalquelle und die untere Buchse für den Sprechverkehr bestimmt.

❾ INCOM-Pegelregler

Zum Einstellen der Sprechverkehr-Lautstärke.

❿ PGM-Pegelregler

Zur Lautstärkeneinstellung der Audio-Signalquelle.

⓫ Sprechverkehrkanalwähler

PROD: Zum Betrieb des Sendekanals.
PRIV: Zum ausschließlichen Kommunizieren zwischen Kamera und CCU. (Der Techniker-Kanal des rückseitigen Anschlußfeldes wird abgeschaltet.)
ENG: Zum Betrieb des Techniker-Kanals.

⓬ MIC ON/OFF-Schalter

Zum Ein- und Ausschalten des Mikrofons der Hör-Sprechgarnitur.

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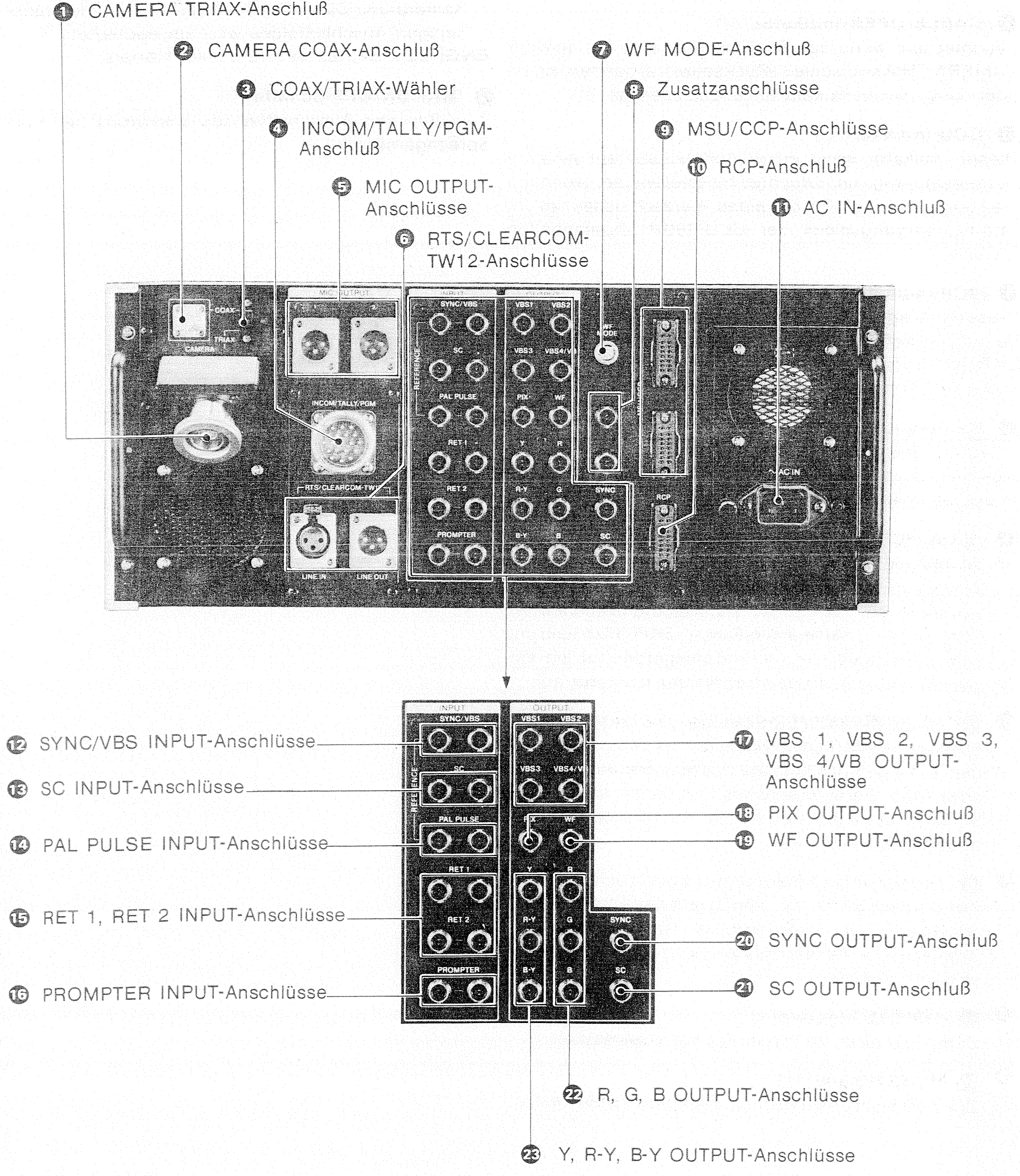
* Wenn einer dieser Indikatoren leuchtet, so arbeiten das CCU-360P oder das Steuerpult nicht.

1-2-2. Rückseite


① CAMERA TRIAX-Anschluß
② CAMERA COAX-Anschluß
③ COAX/TRIAX-Wähler
④ INCOM/TALLY/PGM-Anschluß
⑤ MIC OUTPUT-Anschlüsse
⑥ RTS/CLEARCOM-TW12-Anschlüsse
⑦ WF MODE-Anschluß
⑧ Zusatzanschlüsse
⑨ MSU/CCP-Anschlüsse
⑩ RCP-Anschluß
⑪ AC IN-Anschluß
⑫ SYNC/VBS INPUT-Anschlüsse
⑬ SC INPUT-Anschlüsse
⑭ PAL PULSE INPUT-Anschlüsse
⑮ RET 1, RET 2 INPUT-Anschlüsse
⑯ PROMPTER INPUT-Anschlüsse
⑰ VBS 1, VBS 2, VBS 3, VBS 4/VB OUTPUT-Anschlüsse
⑱ PIX OUTPUT-Anschluß
⑲ WF OUTPUT-Anschluß
⑳ SYNC OUTPUT-Anschluß
㉑ SC OUTPUT-Anschluß
㉒ R, G, B OUTPUT-Anschlüsse
㉓ Y, R-Y, B-Y OUTPUT-Anschlüsse
CAMERA
COAX
TRIAX
MIC OUTPUT
INCOM/TALLY/PGM
RTS/CLEARCOM-TW12
LINE IN
LINE OUT
INPUT
OUTPUT
REFERENCE
SYNC/VBS
SC
PAL PULSE
RET 1
RET 2
PROMPTER
VBS1
VBS2
VBS3
VBS4/VB
PIX
WF
Y
R
R-Y
G
B-Y
B
SYNC
WF MODE
RCP
AC IN

❶ **CAMERA TRIAX-Anschluß**
Schließen Sie hier über ein Triaxialkabel die BVP-360P an. Das Triaxialkabel überträgt die Stromversorgung, die Steuer-Video-, die Audiosignale usw. Der Anschlußblock kann ausgetauscht werden, um alle im Handel erhältlichen Triaxstecker anschließen zu können.

❷ **CAMERA COAX-Anschluß**
Der Kamerakopf BVP-360P kann hier über ein Koaxialkabel angeschlossen werden. Dieses Kabel überträgt alle Signale außer der Stromversorgung. Bei Verwendung dieses Anschlusses muß die Stromversorgung getrennt von einer Stromversorgungseinheit erfolgen.

❸ **COAX/TRIAX-Wähler**
Stellen Sie diesen Wähler entsprechend dem verwendeten Anschluß ein.

COAX: Bei Verwendung des CAMERA COAX-Anschlusses.
TRIAX: Bei Verwendung des CAMERA TRIAX-Anschlusses.

❹ **INCOM/TALLY/PGM-Anschluß** (19pol)
Zum Anschluß der Sprechverkehrsignale, Signallampen-Steuersignale und der Audio-Signalquelle. Verbinden Sie diesen Anschluß mit dem Sprechverkehr/Signallampen/Audio-Anschluß der Steuerkonsole oder des Sprechverkehrsystems.

❺ **MIC OUTPUT-Anschlüsse** (XLR, 3pol)
Von den Mikrofonen des Kamerakopfes aufgenommene Signale liegen hier an.

❻ **RTS/CLEARCOM-TW12-Anschlüsse** (XLR, 3pol)
Zum Anschließen des RTS- oder CLEARCOM-TW12-Sprechverkehrsystems.

❼ **WF MODE-Anschluß** (4pol)
Zur sequentiellen Signalüberwachung kann hier ein Tektronix-Wellenformmonitor angeschlossen werden. Wird die SEQ-Taste des Kamera-Steuerpultes BKP-3601 gedrückt, so liegt an diesem Anschluß das Treppensignal an, und die R-, G- und B-Signale können gleichzeitig sequentiell überwacht werden.

❽ **Zusatzanschlüsse** (BNC-Buchsen)
Normalerweise bleiben diese Anschlüsse frei.

❾ **MSU/CCP-Anschlüsse** (16pol)
Zum Anschließen der Master-Setup-Einheit MSU-360 (Sonderzubehör) über das Verbindungskabel CCA-2 oder des Kamera-Steuerpultes BKP-3601 (Sonderzubehör) über das Verbindungskabel CCA-1. Die Anschlüsse dienen zur Übertragung der Steuersignale. Bei Verwendung des BKP-3601 wird zusätzlich die Stromversorgung übertragen. Beide Anschlüsse sind durchgeschleift. Wenn die MSU-360 mit einem dieser Anschlüsse verbunden ist, so können zwei oder mehrere CCU-Geräte in einer Brückenschaltung angeschlossen und gleichzeitig vom MSU-360 gesteuert werden.

❿ **RCP-Anschluß** (16pol)
Ein Fernsteuerpult der RCP-3600-Serie (z.B. RCP-3631, 3621, 3620) kann hier über das Verbindungskabel CCA-2 angeschlossen werden. Sowohl die Stromversorgung als auch die Steuersignale werden über diesen Anschluß übertragen.

⓫ **AC IN-Anschluß**
Verbinden Sie diesen Anschluß über das mitgelieferte Netzkabel mit dem Stromnetz.

⓬ **SYNC/VBS INPUT-Anschlüsse** (BNC-Buchsen)*
Schließen Sie hier das Bezugs-Synchronsignal (SYNC oder FBAS) für die externe Synchronisierung an. Bei Anschluß des SYNC-Signals ist das Bezugs-Hilfsträgersignal mit den SC INPUT- und PAL PULSE INPUT-Anschlüssen zu verbinden. Wird dagegen ein FBAS-Signal angeschlossen, so ist keine Zuleitung des Hilfsträgersignals und des PAL-Impulses erforderlich.

⓭ **SC INPUT-Anschlüsse** (BNC-Buchsen)*
Schließen Sie hier das Bezugs-Hilfsträgersignal für die externe Synchronisierung an.
Die Zuleitung dieses Hilfsträgersignals ist stets erforderlich, wenn das SYNC-Signal mit dem SYNC/VBS INPUT-Anschluß verbunden wird.

⓮ **PAL PULSE INPUT-Anschlüsse** (BNC-Buchsen)*
Wenn das SYNC-Signal mit dem SYNC/VBS INPUT-Anschluß verbunden ist, schließen Sie hier das PAL-Impulssignal für die externe Synchronisierung an.

⓯ **RET 1, RET 2 INPUT-Anschlüsse** (BNC-Buchsen)*
Das Rücklaufvideosignal von zwei verschiedenen Systemen kann hier angeschlossen werden. An den Tasten des BVP-360P kann zwischen Rücklaufvideosignal 1 (RET 1) und Signal 2 (RET 2) gewählt werden.

⓰ **PROMPTER INPUT-Anschlüsse** (BNC-Buchsen)*
Schließen Sie hier das Teleproptersignal an. Bei Verwendung eines Teleprompter-Monitors sind die Teleprompter-Leiterplattensätze BKP-3602 und BKP-3603 (Sonderzubehör) erforderlich.

---

* Alle Eingänge sind durchgeschleift, so daß eine Brückenschaltung möglich ist. Bei Verwendung der Anschlüsse ist darauf zu achten, die Anschlüsse mit 75 Ohm abzuschließen.

⑰ **VBS 1, VBS 2, VBS 3, VBS 4/VB OUTPUT-Anschlüsse** (BNC-Buchsen)
Das vom Kamerakopf aufgenommene Signal kann hier als FBAS-Signal abgenommen werden. Das Ausgangssignal des VBS 4-Anschlusses kann an einem Schalter der internen VA-Leiterplatte auf FBA umgeschaltet werden. (Genaueres dazu entnehmen Sie bitte Teil 2 ff.)

⑱ **PIX OUTPUT-Anschluß** (BNC-Buchse)
Das Videosignal für den Bildmonitor kann hier abgegriffen werden. Die Anwahl des Signals erfolgt mit den PICTURE MONITOR SELECT-Tasten des Kamera-Steuerpultes (z.B. BKP-3601).

⑲ **WF OUTPUT-Anschluß** (BNC-Buchse)
Das Videosignal für den Wellenformmonitor kann hier abgegriffen werden. Die Anwahl des Signals erfolgt mit den WAVEFORM MONITOR SELECT-Tasten des Kamera-Steuerpultes (z.B. BKP-3601).

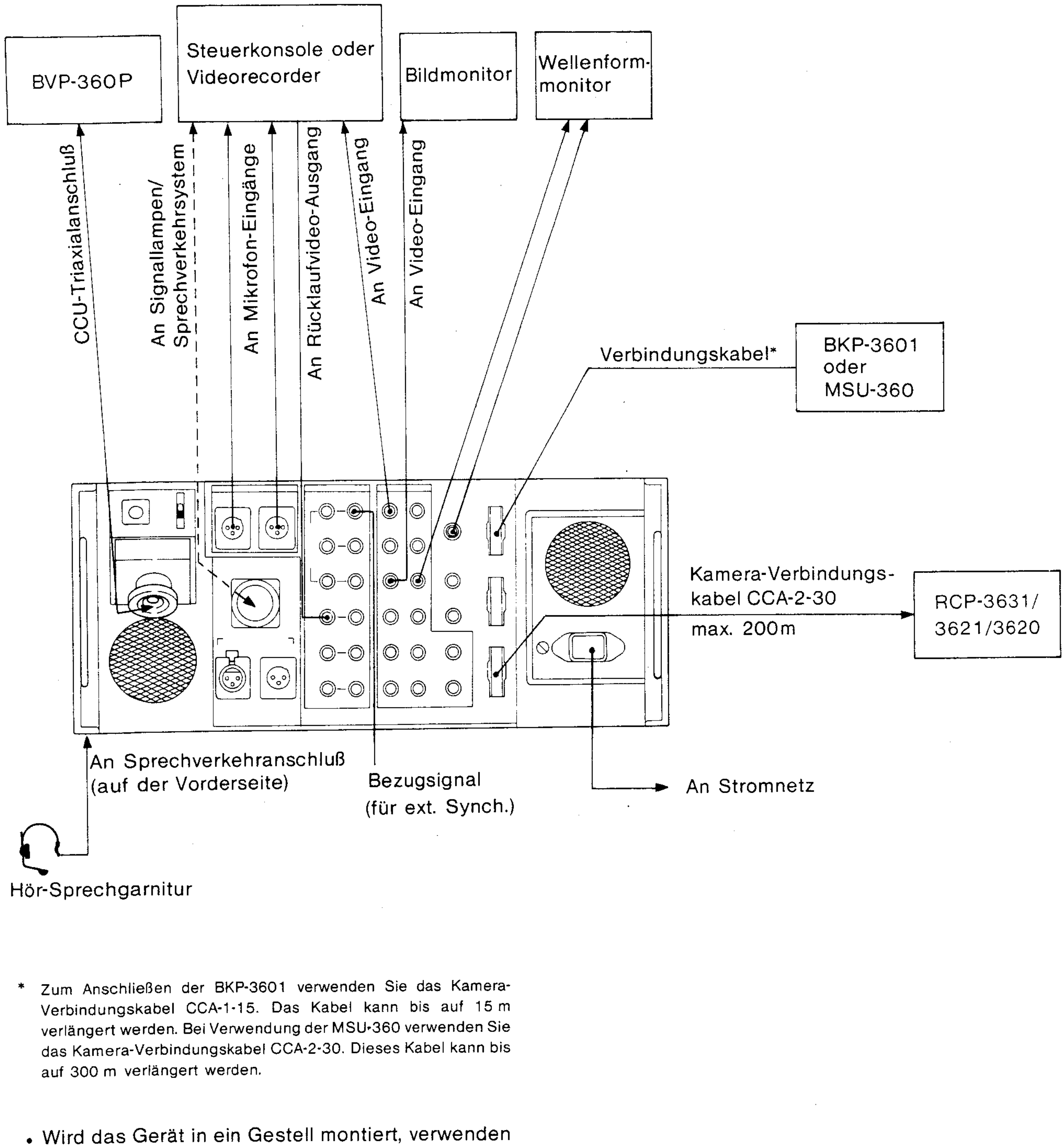
⑳ **SYNC OUTPUT-Anschluß** (BNC-Buchse)
Das vom eingebauten Synchronsignalgenerator erzeugte Synchronsignal (2 Vss, 75 Ohm) liegt hier an. Verbinden Sie dieses Signal mit dem Synchronsignaleingang eines Wellenform-, eines Bild-monitors usw.

㉑ **SC OUTPUT-Anschluß** (BNC-Buchse)
Das vom eingebauten Synchronsignalgenerator gelieferte Hilfsträgersignal (1 Vss, 75 Ohm) liegt hier an. Verwenden Sie dieses Signal beispielsweise für die Verriegelung eines Vektorskops.

㉒ **R, G, B OUTPUT-Anschlüsse** (BNC-Buchsen)
Die R-, G- und B-Signale für einen Chroma-Keyer können hier abgegriffen werden.

㉓ **Y, R-Y, B-Y OUTPUT-Anschlüsse** (BNC-Buchsen)
Die Y-, R-Y- und B-Y-Signale können hier abgegriffen werden.
Verbinden Sie diese Anschlüsse mit einem Videorecorder der Betacam-Serie, einem Digitalrecorder usw.

1-3. ANSCHLUSS


BVP-360P
Steuerkonsole oder Videorecorder
Bildmonitor
Wellenform-monitor
CCU-Triaxialanschluß
An Signallampen/ Sprechverkehrsystem
An Mikrofon-Eingänge
An Rücklaufvideo-Ausgang
An Video-Eingang
An Video-Eingang
Verbindungskabel*
BKP-3601 oder MSU-360
Kamera-Verbindungskabel CCA-2-30
max. 200m
RCP-3631/ 3621/3620
An Sprechverkehranschluß (auf der Vorderseite)
Bezugsignal (für ext. Synch.)
An Stromnetz
Hör-Sprechgarnitur

---

* Zum Anschließen der BKP-3601 verwenden Sie das Kamera-Verbindungskabel CCA-1-15. Das Kabel kann bis auf 15 m verlängert werden. Bei Verwendung der MSU-360 verwenden Sie das Kamera-Verbindungskabel CCA-2-30. Dieses Kabel kann bis auf 300 m verlängert werden.

- Wird das Gerät in ein Gestell montiert, verwenden Sie den Gestellmontagesatz RMM-3601 (Sonderzubehör). (Genaueres entnehmen Sie bitte Teil 2 ff.)

1-4. TECHNISCHE DATEN

Stromversorgung	240V Wechselspannung ±10% (100/120/220V Wechselspannung einstellbar), 50/60 Hz
Leistungsaufnahme	350W
Anschlüsse	VBS 1, VBS 2, VBS 3, VBS 4/VB OUTPUT: BNC-Buchse, je eine FBAS 1,0 Vss, 75 Ohm (Das Signal der VBS 4-Buchse kann auf FBA umgeschaltet werden.) R, G, B OUTPUT: BNC-Buchse, je eine Video 0,7 Vss, 75 Ohm Y, B-Y, R-Y OUTPUT: BNC-Buchse, je eine Y 1 Vss, 75 Ohm B-Y 0,7 Vss, 75 Ohm R-Y 0,7 Vss, 75 Ohm PIX OUTPUT: BNC-Buchse, 1, 1,0 Vss, 75 Ohm WF OUTPUT: BNC-Buchse, 1, 0,7 Vss, 75 Ohm SYNC OUTPUT: BNC-Buchse, 1, 2 Vss, 75 Ohm, negativ SC OUTPUT: BNC-Buchse, 1, 1 Vss, 75 Ohm WF MODE: 4pol, 1 MIC OUTPUT 1, 2 XLR 3pol, Buchsenstecker, je einer, 0 dB/−20 dB wählbar am Schalter der AU-Leiterplatte SYNC/VBS INPUT: BNC-Buchse, 2 SYNC 2 Vss, 75 Ohm oder VBS 1,0 Vss, 75 Ohm SC INPUT: BNC-Buchse, 2, 1 Vss, 75 Ohm PAL PULSE: BNC-Buchse, 2, 2 Vss, 75 Ohm RET 1, RET 2 INPUT: BNC-Buchse, je 2, 1 Vss, 75 Ohm PROMPTER INPUT: BNC-Buchse, je 2, 1 Vss, 75 Ohm MSU/CCP: 16pol Multi-Anschluß, 2 RCP: 16pol Multi-Anschluß, 1 INCOM/TALLY/PGM: 19pol Multi-Anschluß, 1 TALLY 24V Gleichspannung oder Abschluß (wählbar) RTS/CLEARCOM-TW12: XLR 3pol, Buchsenstecker und Buchse, je 1 INCOM: Doppelbuchsen (auf der Vorderseite)
Betriebstemperatur	0°C bis 45°C
Abmessungen	424 × 177 × 450 mm (B/H/T)
Gewicht	29 kg (Triaxial)
Mitgeliefertes Zubehör	Netzkabel (1) Verlängerungsplatte (für CCU-360P) (1) (für Triaxialblock) (1) 4pol Anschluß (1) 19pol Anschluß (1) Nummernschild (1) Bedienungs- und Wartungsanleitung (1)

Änderungen, die dem technischen Fortschritt dienen, bleiben vorbehalten.

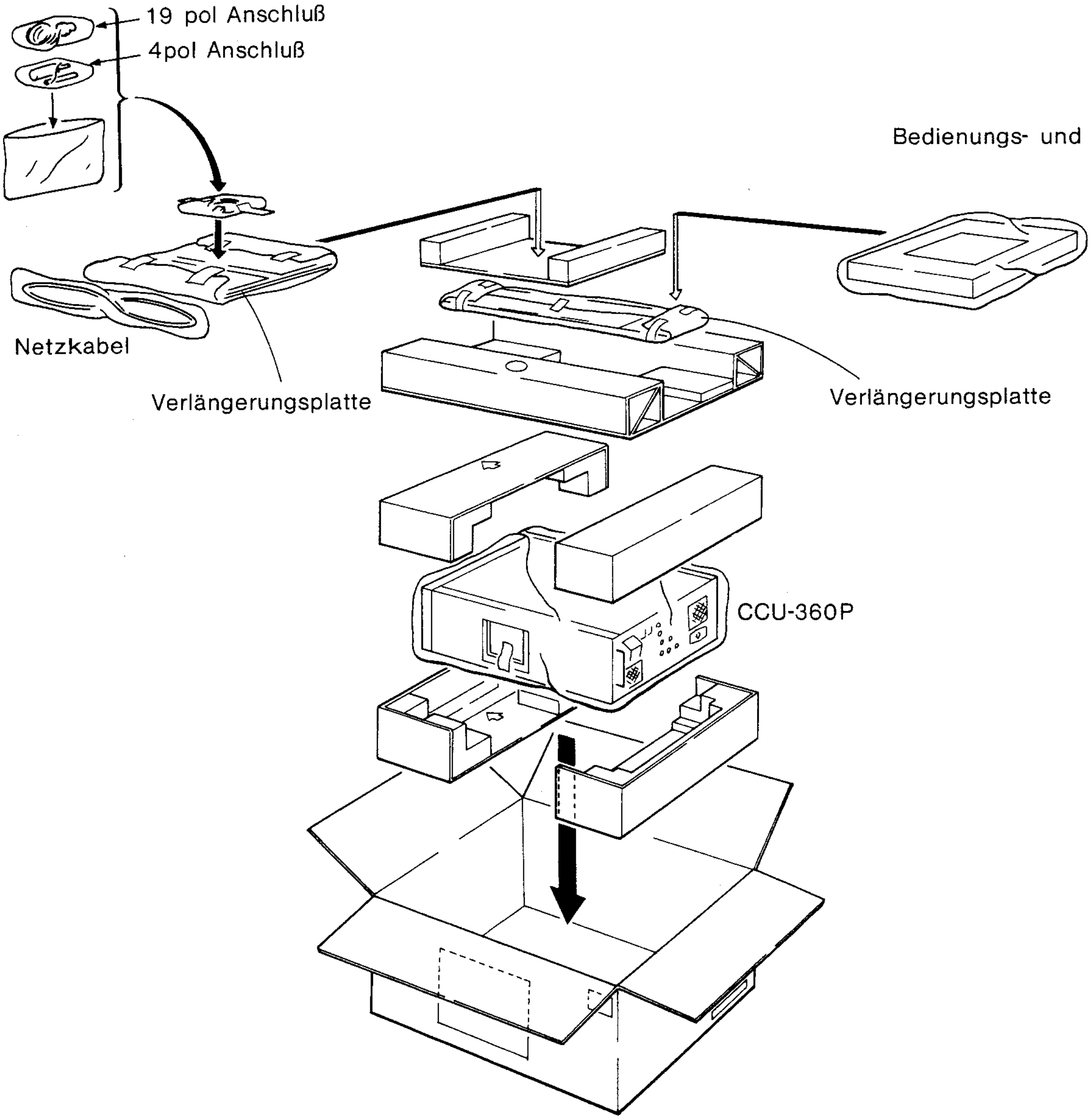
Sonderzubehörteile

Triaxial-Anschlußbox BKP-3606F
Triaxial-Leiterplattensatz BKP-3607
Triaxialkabel CCT-100
Teleprompter-Leiterplattensatz BKP-3603
Gestellmontagesatz RMM-3601

Empfohlene Komponenten

Farb-Videokamera BVP-360P
Teleprompter-Leiterplattensatz BKP-3602
Kamera-Steuerpult BKP-3601
Fernsteuerpult RCP-3631, RCP-3621, RCP-3620
Master-Setup-Einheit MSU-360

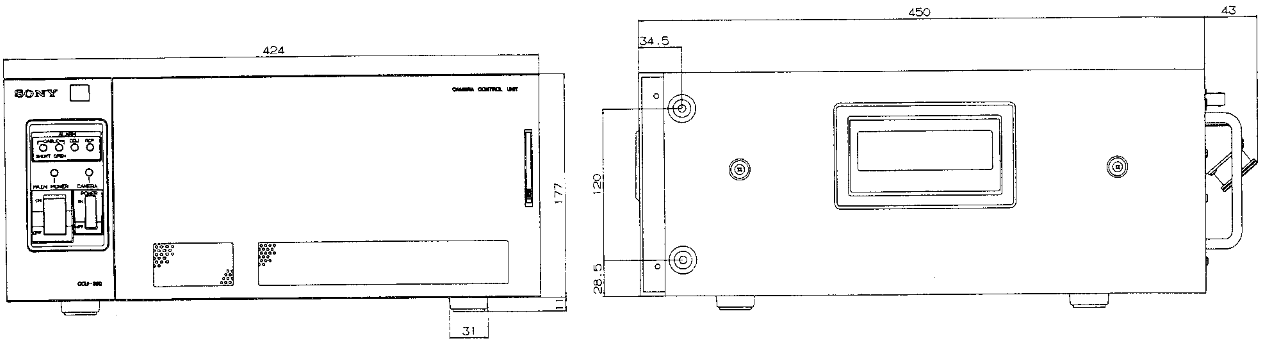
1-5. WIEDERVERPACKUNG


19 pol Anschluß
4pol Anschluß
Bedienungs- und
Netzkabel
Verlängerungsplatte
Verlängerungsplatte
CCU-360P

SECTION 2
INSTALLATION

2-1. OUTSIDE DIMENSIONS

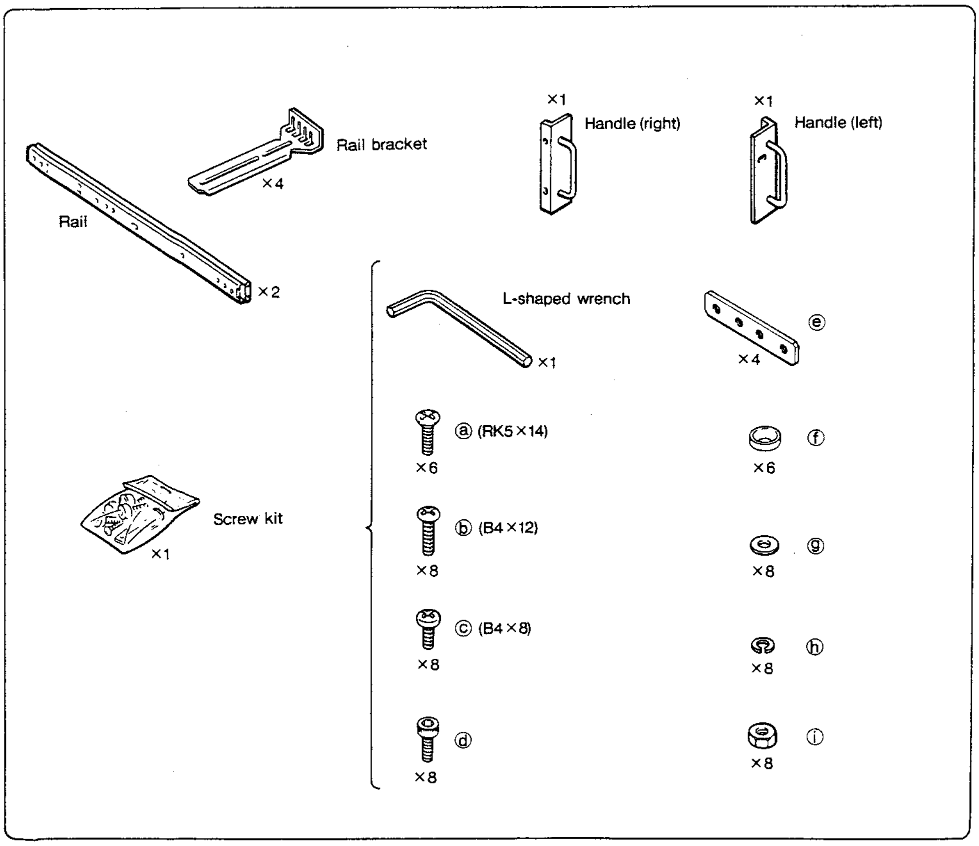
Unit : mm


424
SONY
177
31
450
43
34.5
120
28.5

2-2. INSTALLATION IN A 19-INCH RACK

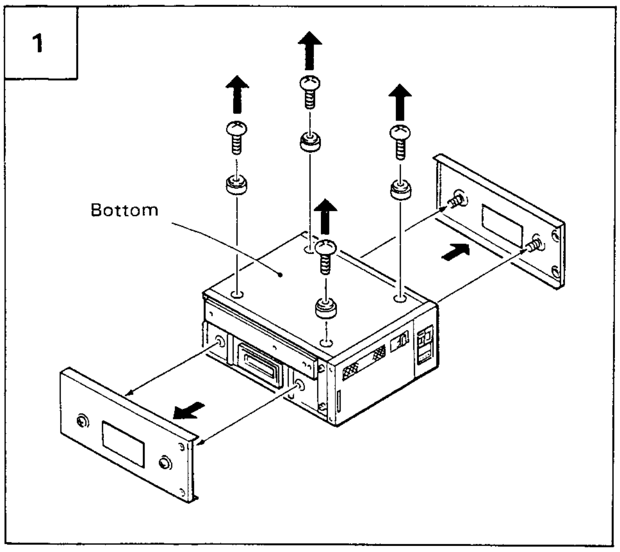
When CCU-360/360P is installed in a 19-inch rack (on the market), provide RMM-3601 (Optional).

RMM-3601 is composed of parts as shown in the figure.


Rail bracket
×4
Rail
×2
×1
Handle (right)
×1
Handle (left)
L-shaped wrench
×1
ⓔ
×4
ⓐ (RK5×14)
×6
ⓕ
×6
Screw kit
×1
ⓑ (B4×12)
×8
ⓖ
×8
ⓒ (B4×8)
×8
ⓗ
×8
ⓓ
×8
ⓘ
×8

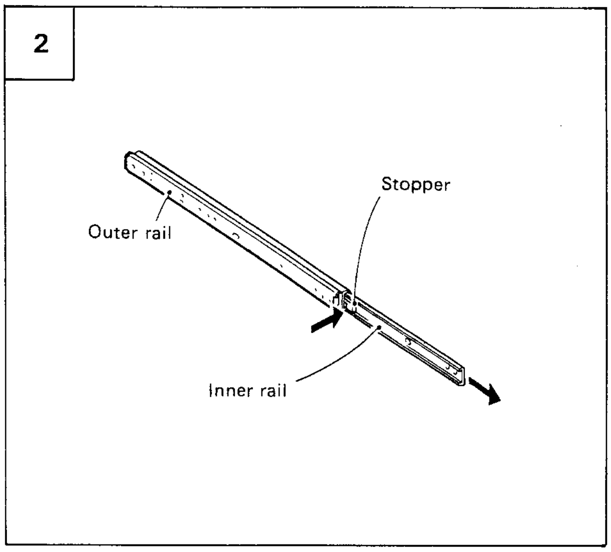
1. Remove screws securing the side panel of CCU-360/360P. Remove screws securing the four feet on the bottom.

1



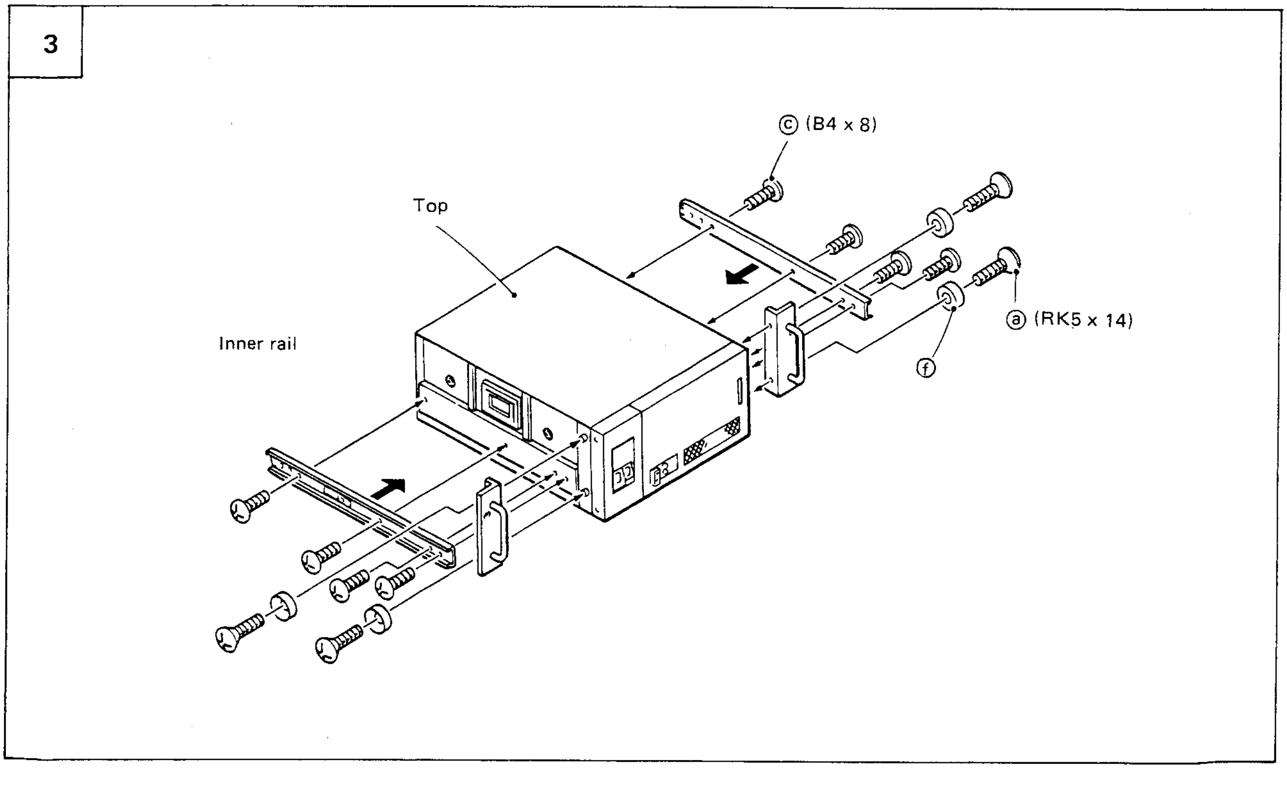
2. Push in the inner rail stopper and pull out the outer rail.

2


Stopper
Outer rail
Inner rail

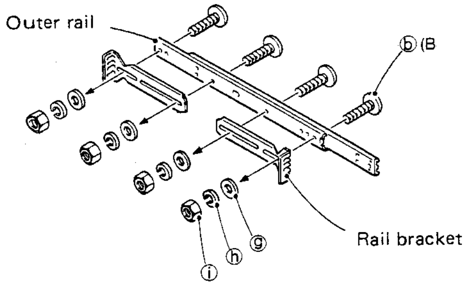
3. Install the outer rails removed in step $\boxed{2}$ to CCU-360/360P using the four screws ⓒ.
Install both right and left handles using the two screws ⓐ.

3


ⓒ (B4 x 8)
Top
Inner rail
ⓐ (RK5 x 14)
ⓕ

4. Using the screws ⓑ (B4×12), loosely attach the rail brackets to both outer rails.

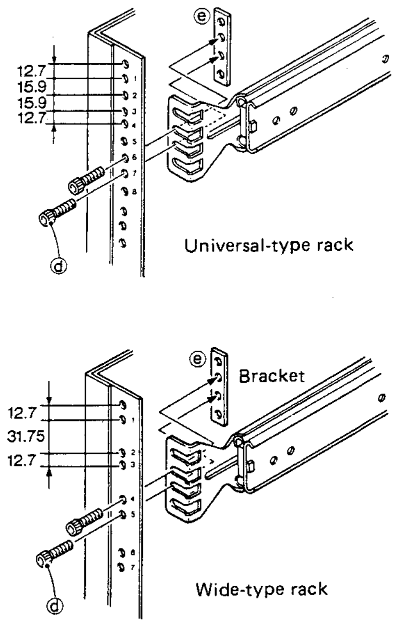
4


Outer rail
ⓑ(B
Rail bracket
ⓖ
ⓗ
ⓘ

5. Adjust the length of the rail bracket in step 4 so as to fit the depth of the rack and tighten the screws ⓑ.

6. Install the rail bracket in step 5 using the two hexagon socket head bolts.

6

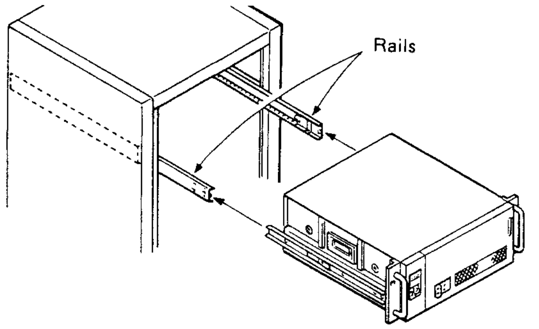

ⓔ
12.7
15.9
15.9
12.7
ⓓ
ⓔ
Bracket
12.7
31.75
12.7
ⓓ

Universal-type rack

Wide-type rack

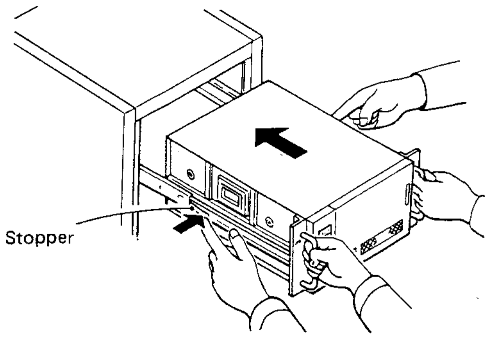
7. Pull these rails out.

7



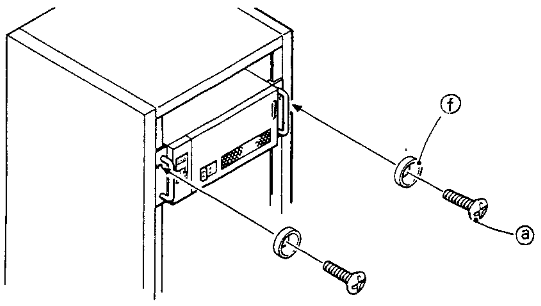
8. Push in both inner rail stopper to release the lock, and slide the CCU-360/360P into the rack.

8



9. Secure the CCU-360/360P into the rack with the screws ⓐ (RK5×14) and the washer ⓕ.

9



2-3. OPERATING ENVIRONMENT

Operating temperature: 0°C to +45°C

1. Install in a dry, well ventilated location.
2. Do not install in a room at a high temperature or near a heat source.
3. Do not install in a place where there is a lot of dust or vibration.
4. Do not install in a strong electric or magnetic field.
5. Do not install in a place where the unit can be exposed to direct sunlight or any other strong light such as electronic flashlight.

SECTION 3
SERVICE INFORMATION

3-1. GENERAL DESCRIPTION OF CIRCUIT BOARD

SG-9/9A BOARD

It contains the pulse generating circuit and genlock circuit. Pulse generating circuit generates the synchronizing and timing pulses such as clamping, blanking, sampling pulses etc . . . . And generated pulses are fed to the deflection circuit and video signal processing circuit as reference pulses. Genlock circuit contains the SYNC/SC separating circuit. When the genlock signal is fed into the CCU, the CCU changes to genlock mode automatically.

The phases of HD pulse and subcarrier can be adjusted on the control panel (BKP-3601) through the AT-26 board. So the alignment of H phase and subcarrier phase with another camera system can be performed easily.

VA-28 BOARD

It contains the video signal amplifier, white clipping, blanking cleaning and black setting circuits for the R, G and B signals fed from the camera head via the triaxial cable or the multicore cable.

It contains the signal selection circuits for PIX and WF output terminals. Signal selection is controlled by the control panel, and selected signals are output from PIX OUT or WF OUT terminal on the reare panel of CCU-360/360P.

It also contains the return video circuit which selects the RETURN VIDEO 1 or 2 and mixes the return video signal with the camera head signals. Selection or mixing of return video signal is chosen by the camera head, and selected or mixed return video signal is fed to the camera head.

EN-31/31A BOARD

It contains the color-bar generating circuit, encoder circuit, matrix circuit for I (V), Q (U) and Y signals and matrix circuit of Y and color difference signals for BETA-CAM system.

It also contains the SATURATION control circuit and CONTRAST control circuit which can be controlled by control panel.

AT-26 BOARD

It contains three CPUs. Control of the video signal circuits, processing of control datas and exchange of datas and commands with control panel, RCP and MSU are done by respective CPU.

Communication with external CPUs (such as control panel) is performed by 8-bit serial data.

AU-56 BOARD

It contains the audio signal circuits such as INCOM, MIC and PGM circuits. Two intercom lines (ENG and PROD) are provided.

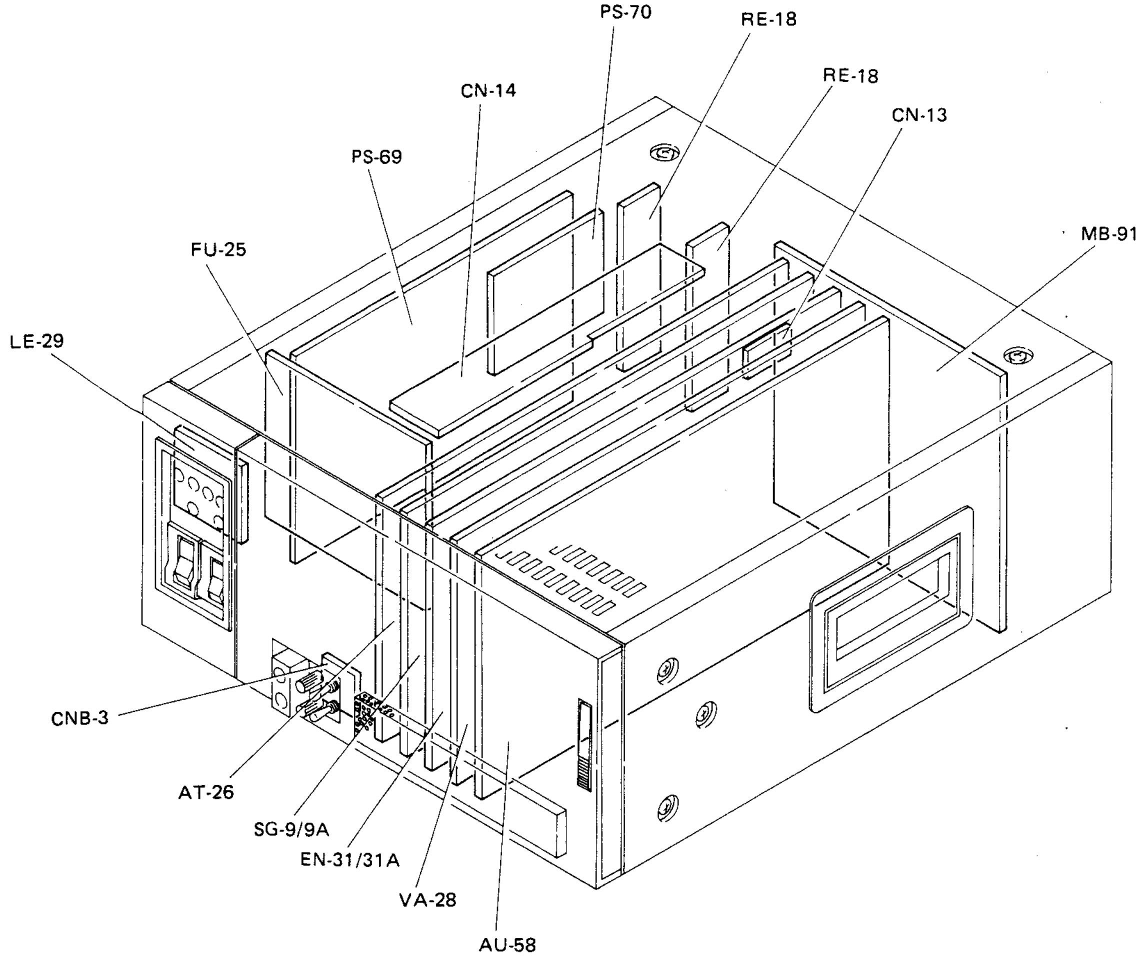
A PGM (Program Audio) line also be provided and you can monitor the PGM on the camera head side.

INCOM, MIC and PGM signals are sent between the CCU and the camera head via the triaxial cable or the multicore cable.

POWER UNIT

The power block is designed as a plug-in type unit for easy attachment and removal. The power unit provides a transformer and DC power supply circuit for CCU-360/360P moreover a transformer for the camera head. The voltage of 240V AC can be supplied from the power supply unit to the camera head via the triaxial cable or multicore cable.

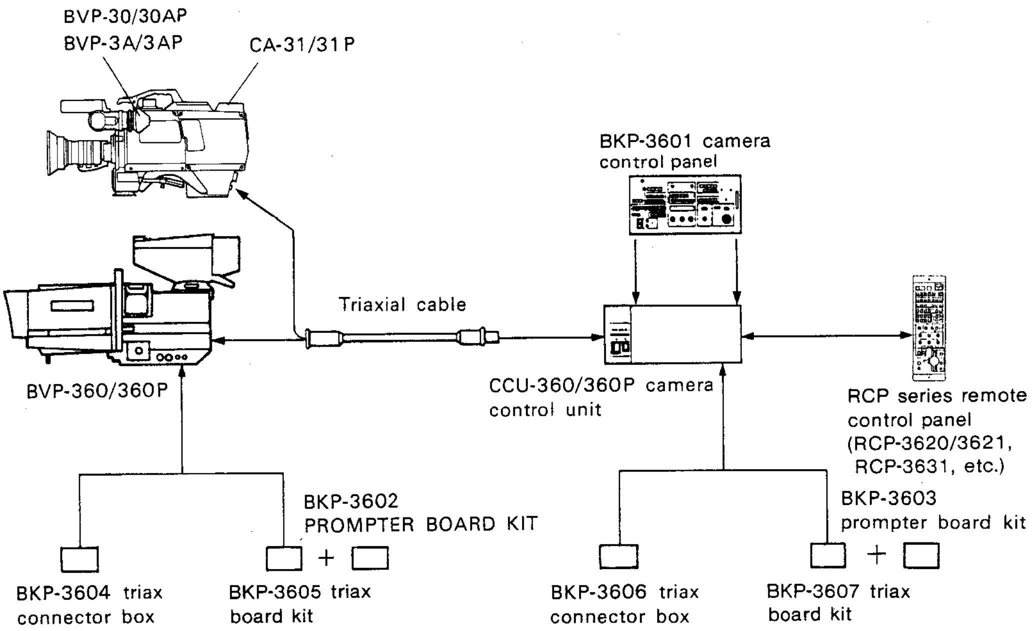
3-2. LOCATION OF MOUNTED CIRCUIT BOARD


PS-70
RE-18
RE-18
CN-14
CN-13
PS-69
MB-91
FU-25
LE-29
CNB-3
AT-26
SG-9/9A
EN-31/31A
VA-28
AU-58

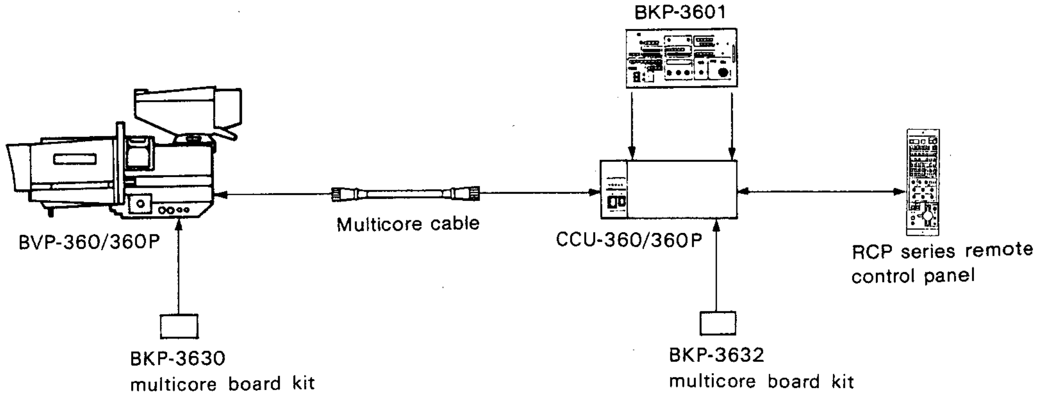
3-4. SYSTEM CONFIGURATION

3-4-1. Basic System Configuration

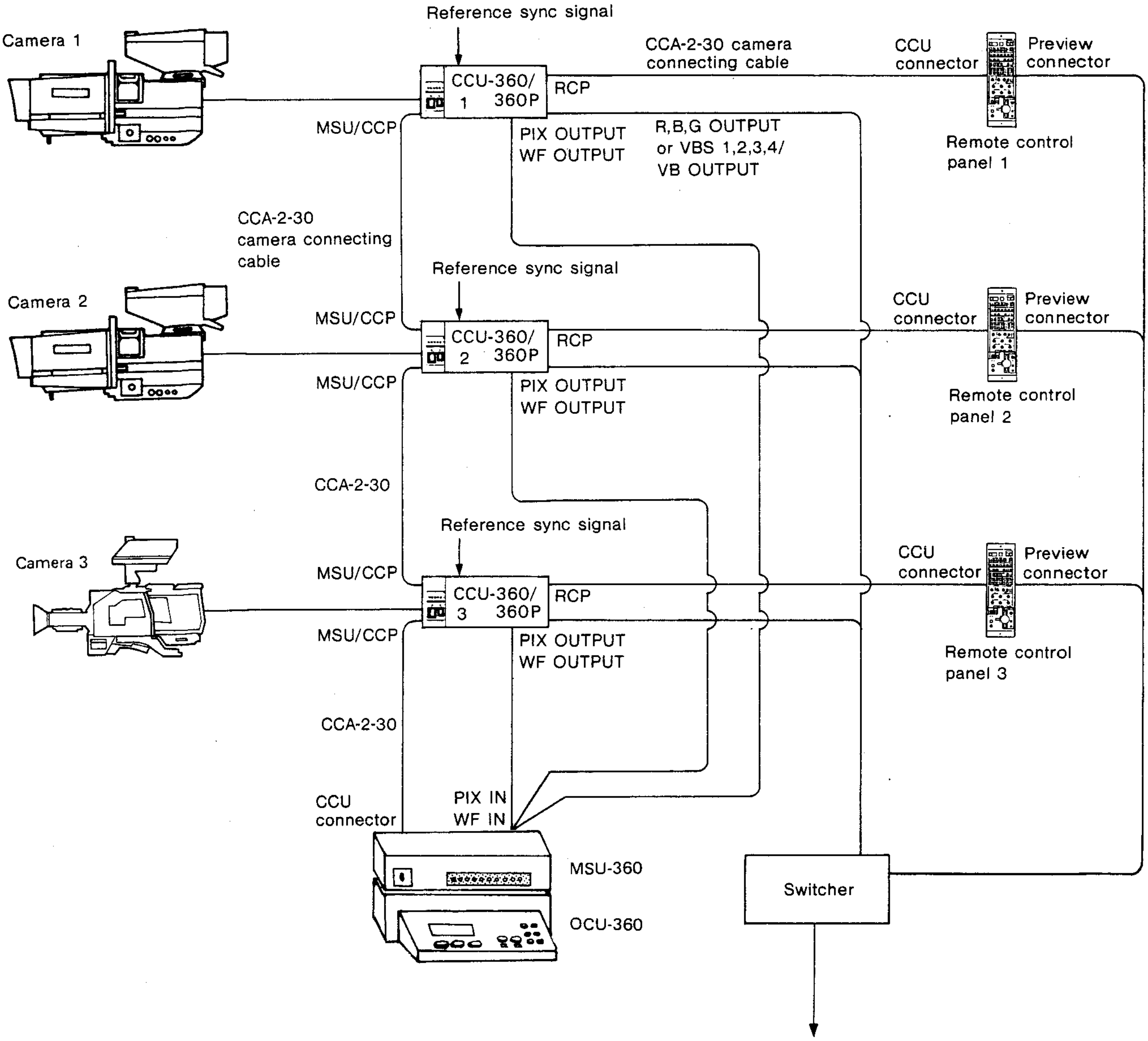
- When the triaxial cable is used


BVP-30/30AP
BVP-3A/3AP
CA-31/31P
BKP-3601 camera control panel
Triaxial cable
BVP-360/360P
CCU-360/360P camera control unit
RCP series remote control panel (RCP-3620/3621, RCP-3631, etc.)
BKP-3602 PROMPTER BOARD KIT
BKP-3603 prompter board kit
+
+
BKP-3604 triax connector box
BKP-3605 triax board kit
BKP-3606 triax connector box
BKP-3607 triax board kit

- When the multicore cable is used

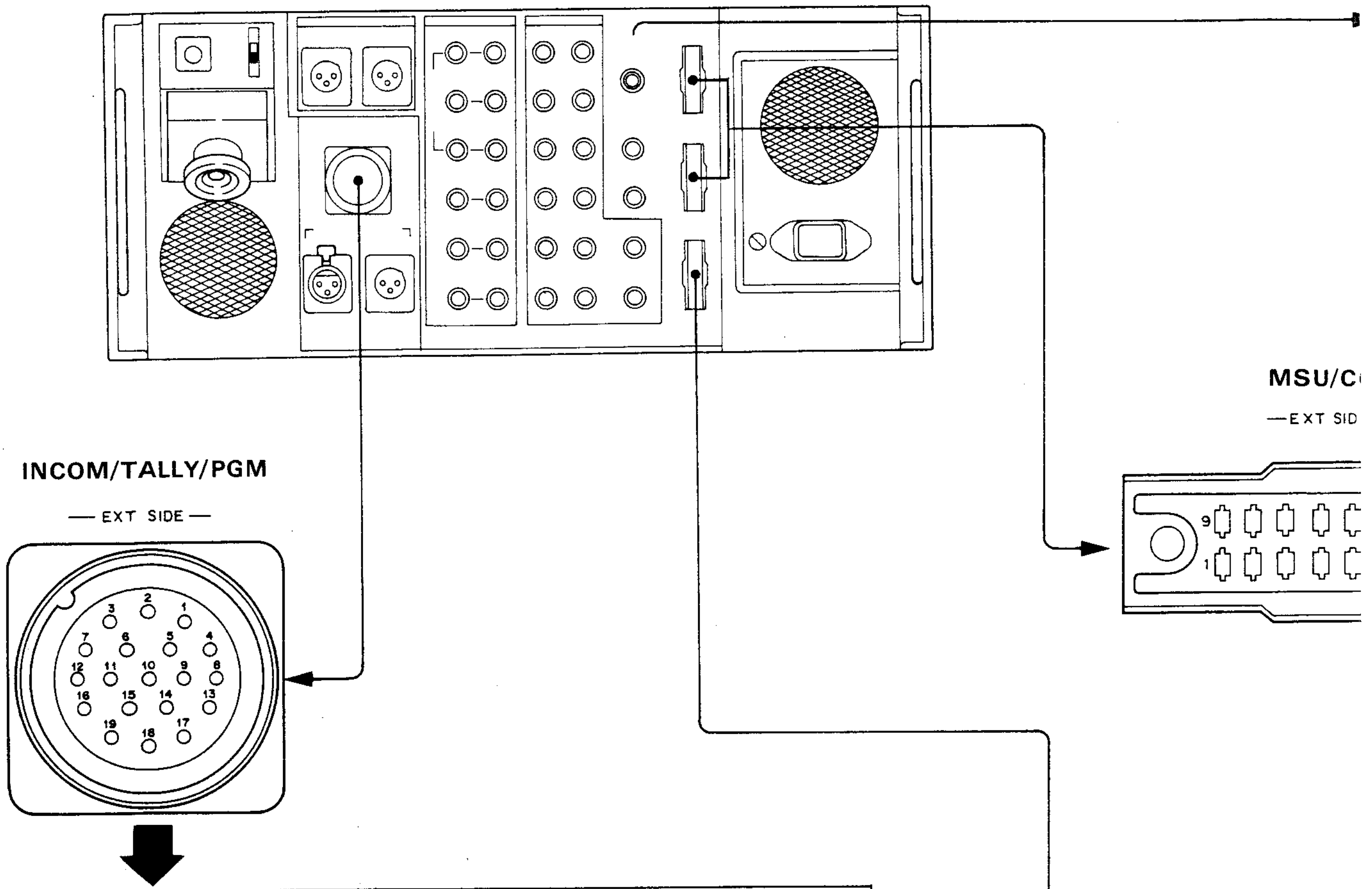

BKP-3601
BVP-360/360P
Multicore cable
CCU-360/360P
RCP series remote control panel
BKP-3630 multicore board kit
BKP-3632 multicore board kit

3-4-2. Multiple Camera Operation in Combination with the MSU-360 and the OCU-360


Reference sync signal
Camera 1
CCA-2-30 camera connecting cable
CCU connector
Preview connector
CCU-360/ 1 360P
RCP
MSU/CCP
PIX OUTPUT
WF OUTPUT
R,B,G OUTPUT or VBS 1,2,3,4/ VB OUTPUT
Remote control panel 1
CCA-2-30 camera connecting cable
Reference sync signal
Camera 2
MSU/CCP
CCU-360/ 2 360P
RCP
CCU connector
Preview connector
MSU/CCP
PIX OUTPUT
WF OUTPUT
Remote control panel 2
CCA-2-30
Reference sync signal
Camera 3
MSU/CCP
CCU-360/ 3 360P
RCP
CCU connector
Preview connector
MSU/CCP
PIX OUTPUT
WF OUTPUT
Remote control panel 3
CCA-2-30
CCU connector
PIX IN
WF IN
MSU-360
OCU-360
Switcher

- The MSU-360 and OCU-360 make it possible to connect a maximum of 8 cameras (Up to 32 cameras with the extension unit), control and set them up.

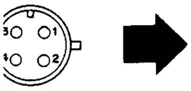
3-5. CONNECTOR'S PIN FUNCTION

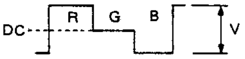

MSU/C
—EXT SID
INCOM/TALLY/PGM
— EXT SIDE —
9
1
2
3
1
7
6
5
4
12
11
10
9
8
16
15
14
13
19
18
17
RCP
—EXT SID
9
1

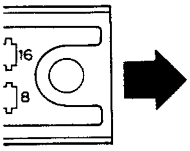
PIN No.	SIGNAL	I/O	SPECIFICATION
1	PGM (H)	I	PGM AUDIO INPUT LEV. = –20dBs/0dBm (Selected by SW on AU-58 board)
2	PGM (C)	I	
3	PGM (GND)	—	
4	R TALLY (X)	I	TALLY ON: SHORT or 12~24V DC VOLTAGE is added between (X) and (Y)
5	R TALLY (Y)	I	
6	G TALLY (X)	I	TALLY ON: SHORT or 12~24V DC VOLTAGE is added between (X) and (Y)
7	G TALLY (Y)	I	
8	CHU/CCU 1 (H)	O	INCOM 1 (ENG) SYSTEM RECEIVE OUTPUT OUTPUT LEV.=0dBm BALANCED
9	CHU/CCU 1 (C)	O	
10	GND	—	GND
11	CHU/CCU 2 (H)	O	INCOM 2 (PROD) SYSTEM RECEIVE OUTPUT OUTPUT LEV.=0dBm BALANCED
12	CHU/CCU 2 (C)	O	
13	SYS 1 TALK (H)	I	INCOM 1 (ENG) SYSTEM TALK INPUT INPUT LEV.=–16dBs, 5~10kΩ, BALANCED
14	SYS 1 TALK (C)	I	
15	SYS 2 TALK (H)	I	INCOM 2 (PROD) SYSTEM TALK INPUT INPUT LEV.=–16dBs, 5~10kΩ, BALANCED
16	SYS 2 TALK (C)	I	
17	INCOM 1 (GND)	—	SHIELD, INCOM 1 (ENG)
18	NC	—	Non-connection
19	INCOM 2 (GND)	—	SHIELD, INCOM 2 (PGM)

: MODE

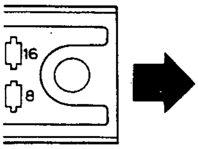
XT SIDE —



PIN No.	SIGNAL	I/O	SPECIFICATION
1	SEQ CTL (GND)	—	(OPEN COLLECTOR) SEQ MODE: SHORT SEQ OFF: OPEN
2	SEQ CTL	O	
3	STAIR CASE	O	 $V=12^{+1}_{-6}V$ DC=0±2V
4	STAIR CASE (GND)	—	



PIN No.	SIGNAL	I/O	SPECIFICATION
1	GND	—	—
2	GND (CP)	—	—
3	CCU-CP DATA (X)	O	CCU SERIAL DATA OUTPUT: 0.7~4.3Vp-p, Zo=68Ω BALANCED
4	CCU-CP DATA (Y)	O	
5	CCU-CP DATA (GND)	—	
6	MSU-CCU IN/OUT (X)	I/O	MSU↔CCU SERIAL DATA: RS422 Equivalent
7	MSU-CCU IN/OUT (Y)	I/O	
8	MSU-CCU (GND)	—	
9	+30V (CP)	O	CONTROL PANEL POWER: +30V DC
10	GND (CP)	—	
11	CP-CCU DATA (X)	I	CP SERIAL DATA INPUT: 0.7~4.3Vp-p, BALANCED
12	CP-CCU DATA (Y)	I	
13	CP-CCU DATA (GND)	—	
14	SEQ SYNC IN (X)	I	SEQ CONTROL INPUT: BALANCED
15	SEQ SYNC IN (Y)	I	
16	SEQ SYNC (GND)	—	

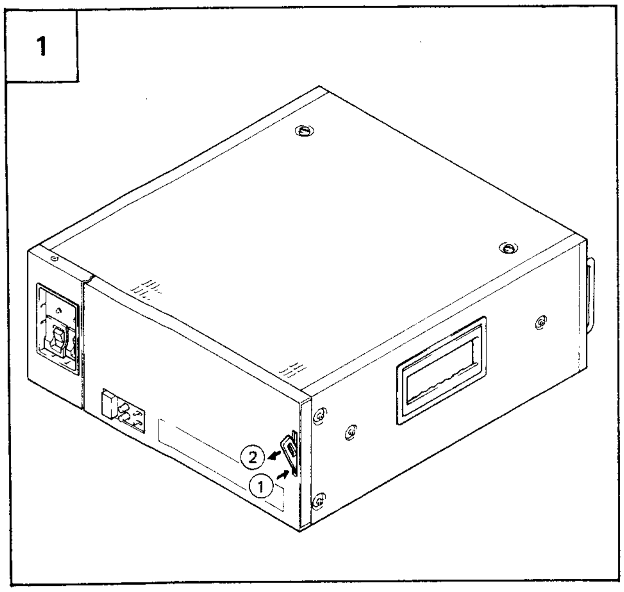


PIN No.	SIGNAL	I/O	SPECIFICATION
1	CABLE SHIELD	—	—
2	GND	—	—
3	NC	—	Non-connection
4	NC	—	Non-connection
5	NC	—	Non-connection
6	CCU-RCP DATA (X)	O	CCU SERIAL DATA OUTPUT: 0.7~4.3Vp-p, Zo=68Ω BALANCED
7	CCU-RCP DATA (Y)	O	
8	CCU-RCP DATA (GND)	—	
9	+30V (RCP)	O	RCP POWER: +30V DC
10	GND (RCP)	—	—
11	NC	—	Non-connection
12	NC	—	Non-connection
13	NC	—	Non-connection
14	RCP-CCU DATA (X)	I	RCP SERIAL DATA INPUT: 0.7~4.3Vp-p, BALANCED
15	RCP-CCU DATA (Y)	I	
16	RCP-CCU DATA (GND)	I	

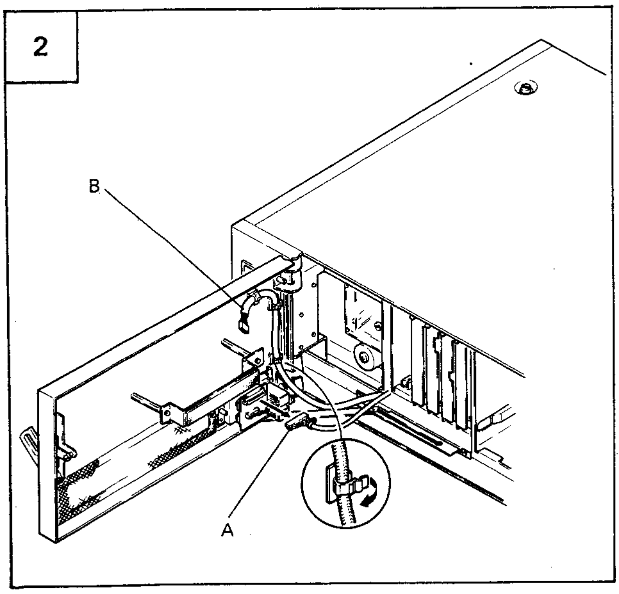
SECTION 4
REPLACEMENT OF MAIN PARTS

4-1. INSTALLATION OF BKP-3601 TO CCU-360/P

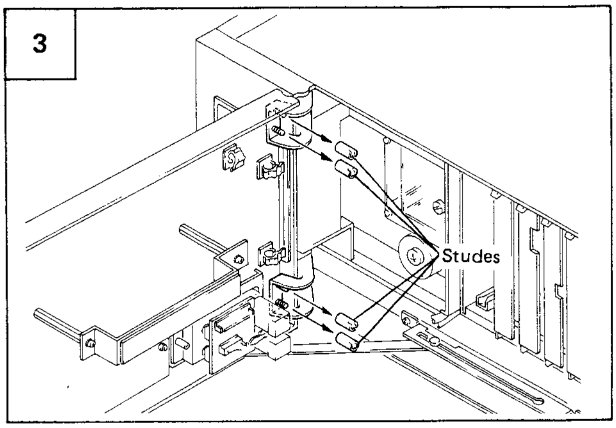
1. Push the bottom of handle in the direction shown by the arrow ①. Pull the handle in the direction shown by the arrow ② and open the blank panel.



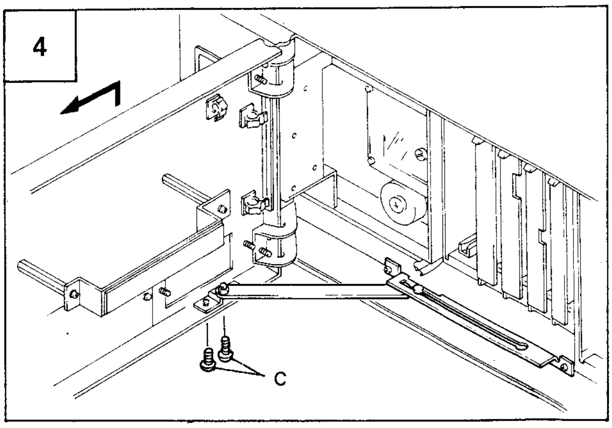
2. Disconnect the INCOM harness A.
Remove the harness B fixed by the cable clamp.



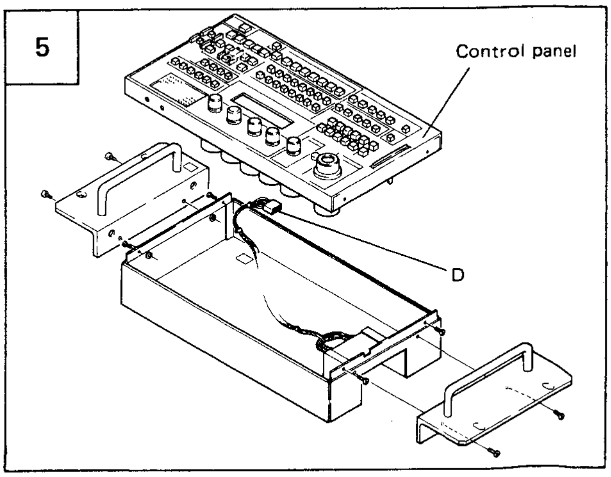
3. Remove the four studes which fix the blank panel to CCU-360/P.



4. Remove the two screws C, and remove the stay from the blank panel.
Remove the blank panel from CCU-360/P.

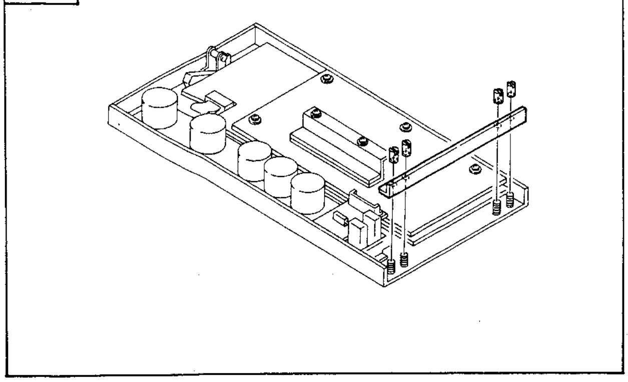


5. Remove the control panel from the blank panel case. Remove the four screws and pull the only control panel.
Disconnect the connector D.



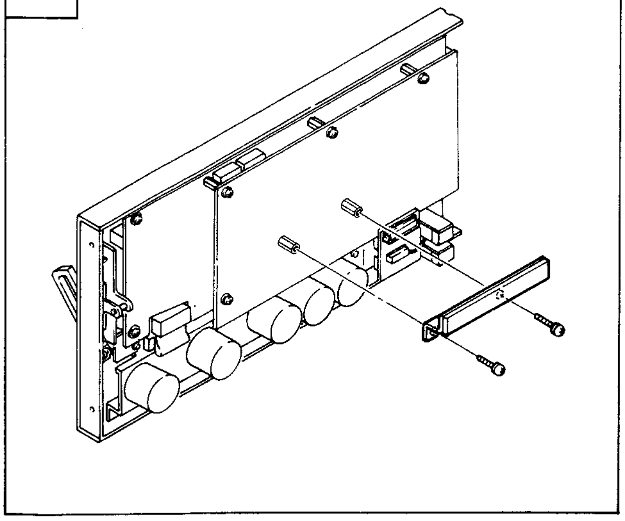
6. Remove four studes, and remove the stay from control panel.

6



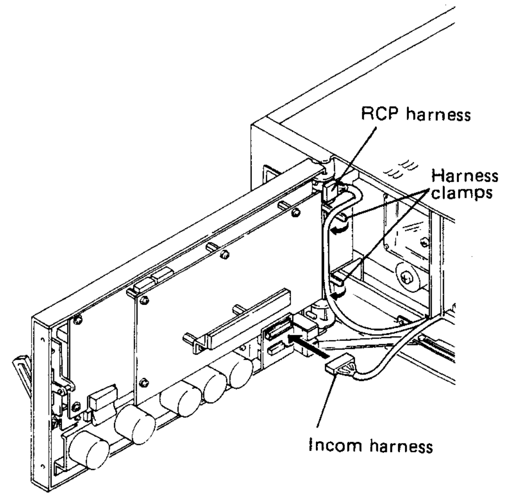
7. Remove the board retainer and re-attach it in direction as shown below.

7



8. Install the control panel to CCU instead of the blank panel, and fix it with the four studes removed in step 3.
   Install the stay to the control panel.
   Connect the harness A and B as shown below. Fix the harness B with harness clamps.

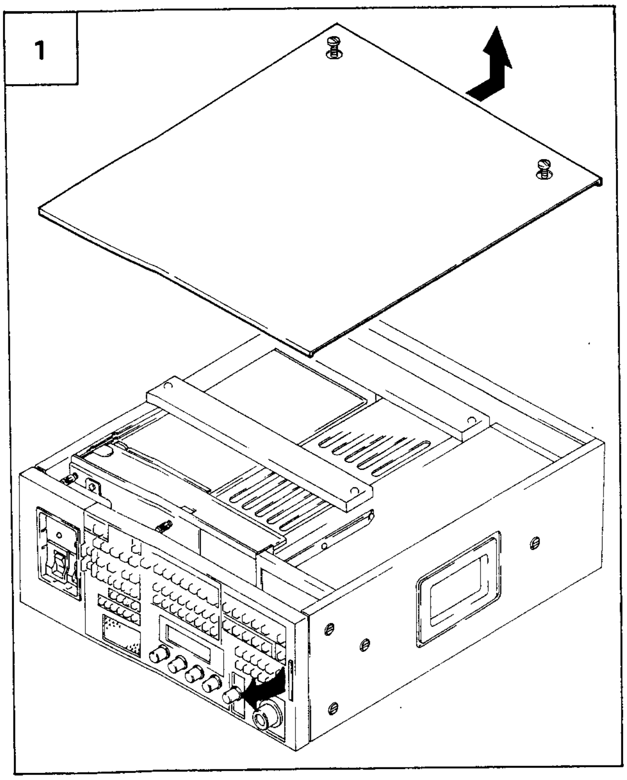
8



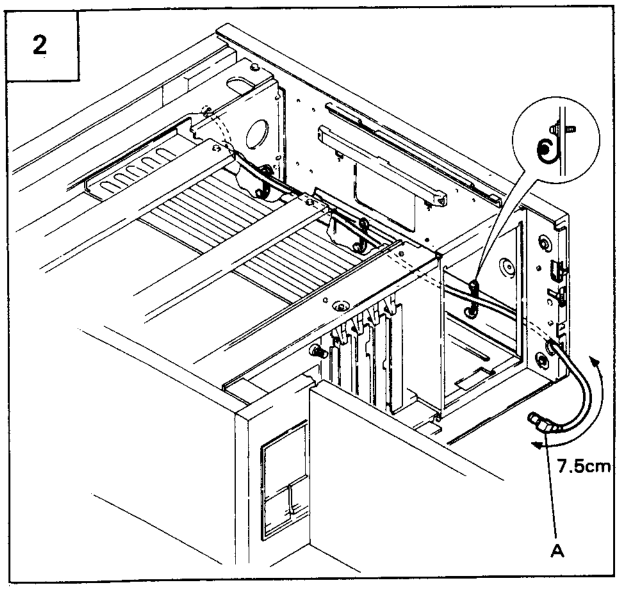
9. Remove the board retainer fixed with blank panel, and re-attach it to blank panel in the opposite direction.
   Attach the stay removed in step 6 to blank panel.
   Install the blank panel to blank panel case instead of the control panel.

4-2. INSTALLATION OF BKP-3606

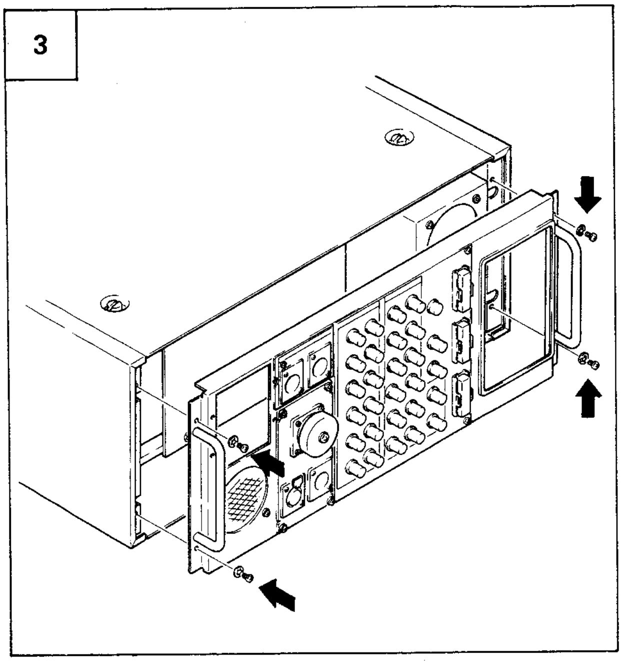
1. Loosen the two coin screws. Remove the top panel by sliding and pulling it in the direction shown by the arrow. Open the control panel or blank panel.



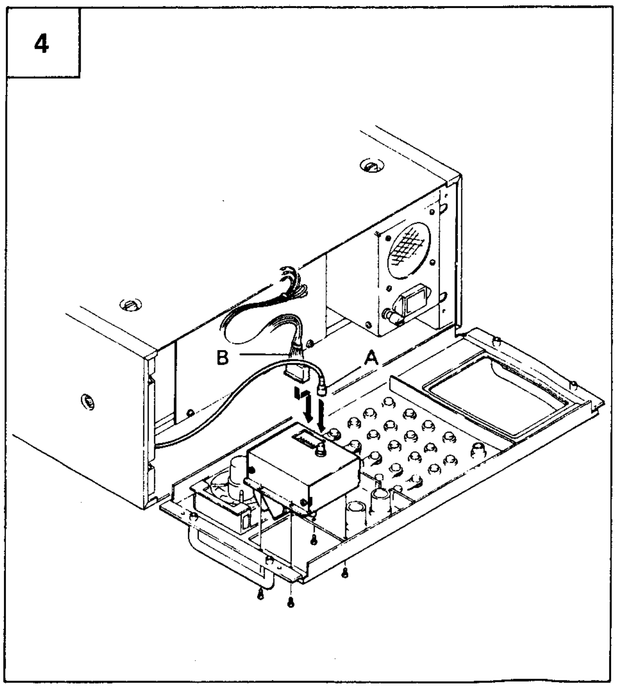
2. Install the BKP-3606 cable (A) by putting it into the cable clampers which are mounted on the CCU-360. The cable should be positioned as shown in fig. bellow so that the cable stick out approximately 7.5 cm from the front end of the chassis.



3. Remove the four screws shown in the figure below and remove the rear panel.



4. Install BKP-3606 to the rear panel of CCU-360/P by using four screws.
   Connect the cable A and harness B as shown below.

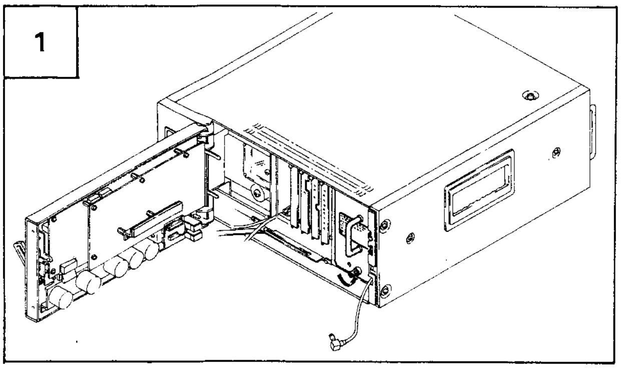


5. Install the rear panel where it was.

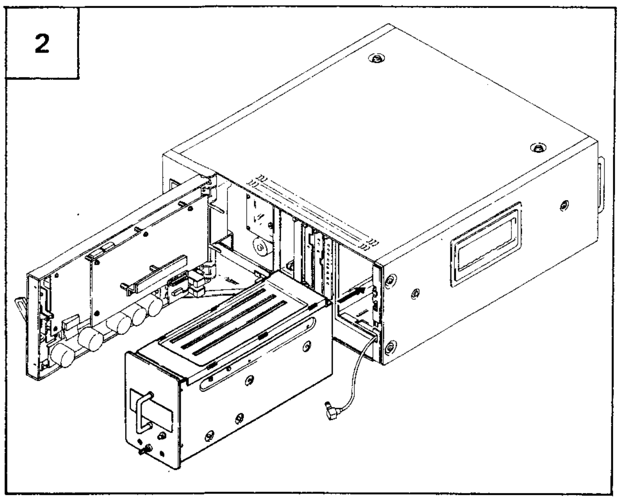
4-3. INSTALLATION OF BKP-3607

NOTE: Install the BKP-3606 to CCU-360/P refering to 4-2. INSTALLATION OF BKP-3606 before installing of BKP-3607.

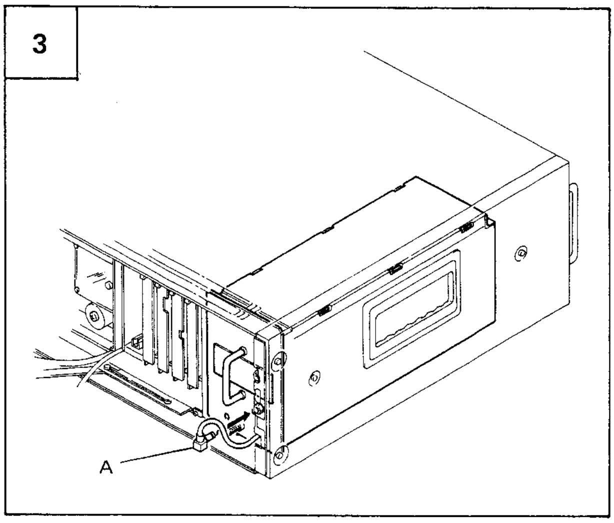
1. Install the top panel. Insert the BKP-3607 into CCU-360/P as shown in the figure below.



2. Turn the knob located in the bottom of BKP-3607 in the direction shown by the arrow and fix it. (When BKP-3607 is removed from CCU-360/P, turn the knob in the opposite direction of the arrow.)

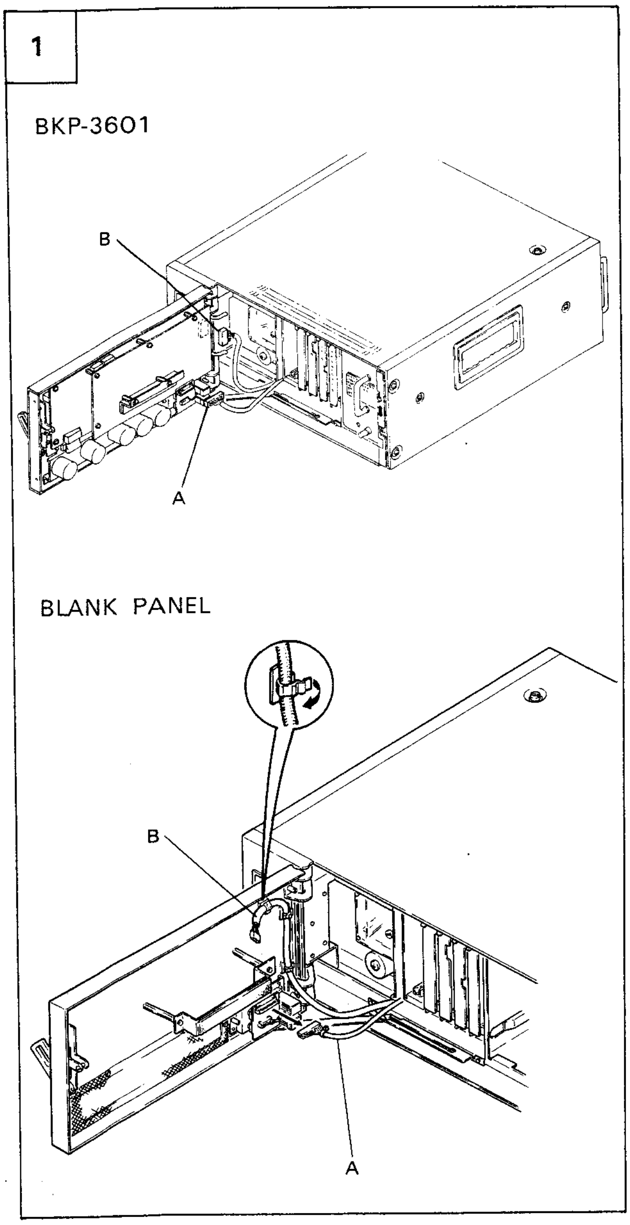


3. Connect the cable A to BKP-3607. When connect the cable A, form the cable as shown below. (If the slack of cable is lower, the control panel can not be shut.

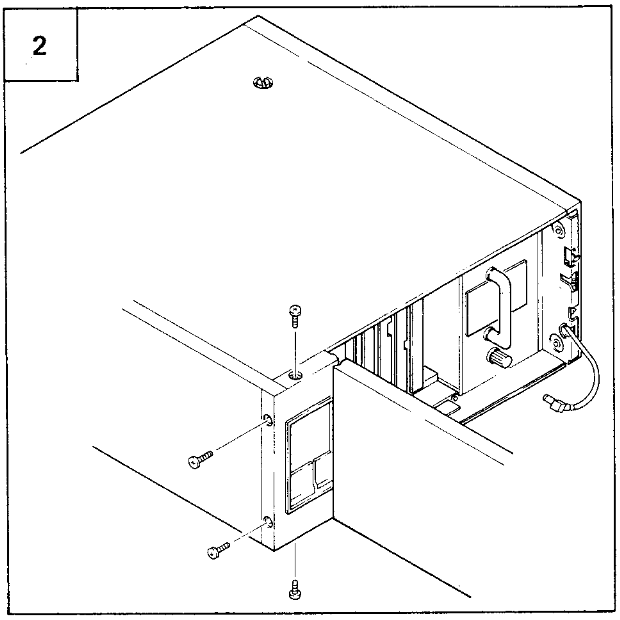


4-4 REPLACEMENT OF AC UNIT

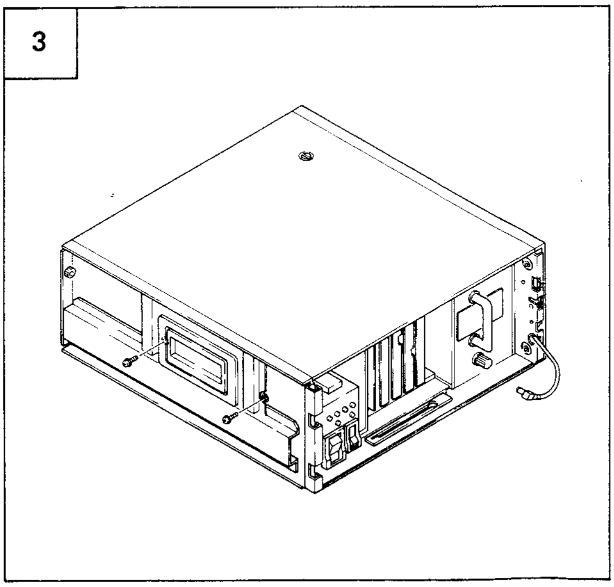
1. Disconnect the harnesses A and B from incom connector. Remove the harness clamps or the cable clamps.



2. Remove the four screws and remove the front panel.

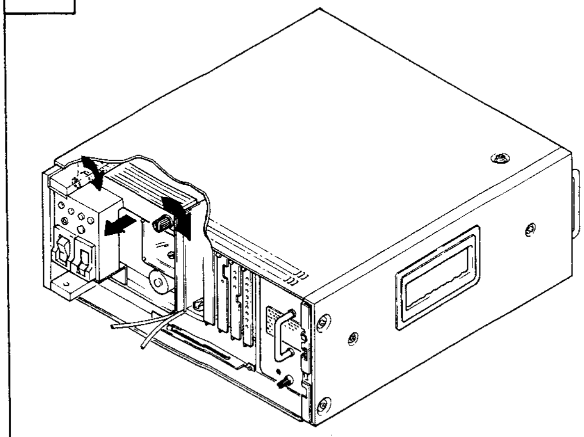


3. Remove the two screws which fix the AC unit to the left side panel.



4. Turn the knob of the AC unit in the direction shown by the arrow and pull it toward you.

4



5. When you install the AC unit, reverse the procedure.

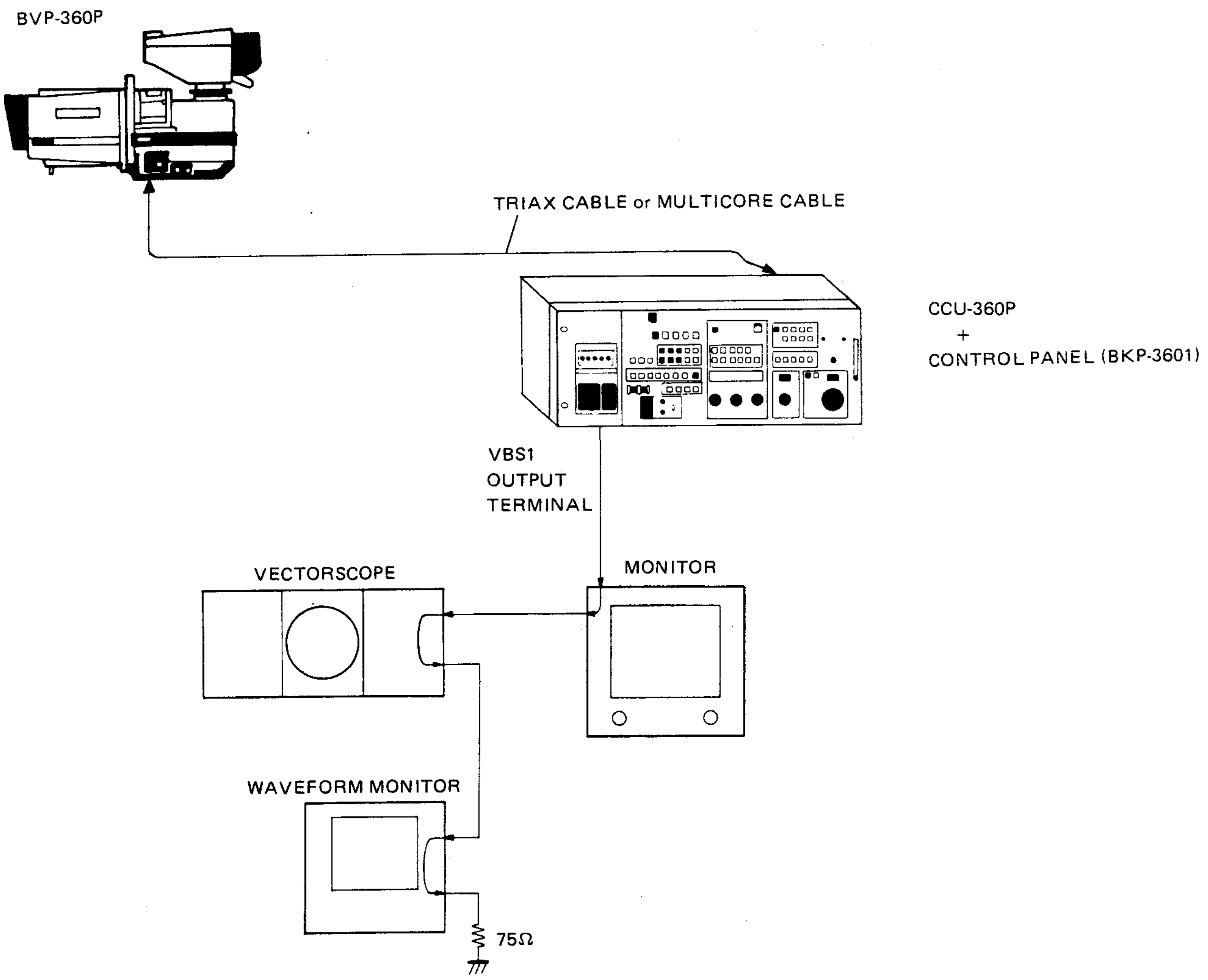
SECTION 5
ALIGNMENT

5-1. PREPARATION

5-1-1. Equipment Required

- Oscilloscope
- Waveform Monitor (WFM)
- Vectorscope
- Frequency Counter
- Extension Board (EX-63)
- Digital Voltmeter
- Monitor

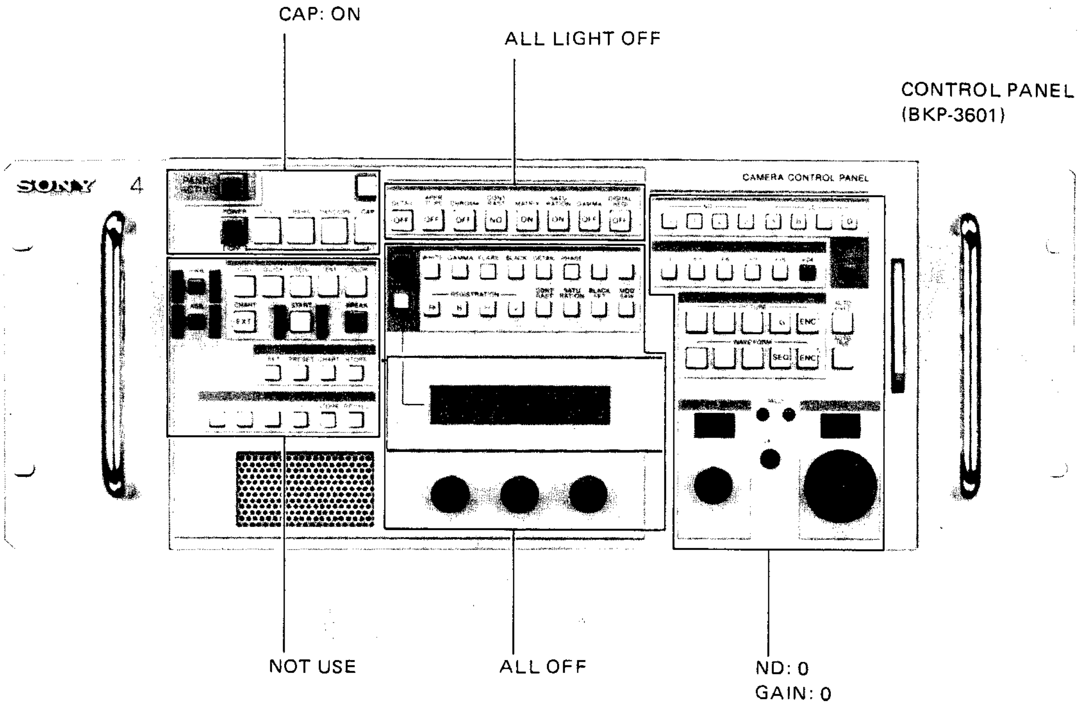
5-1-2. Connection

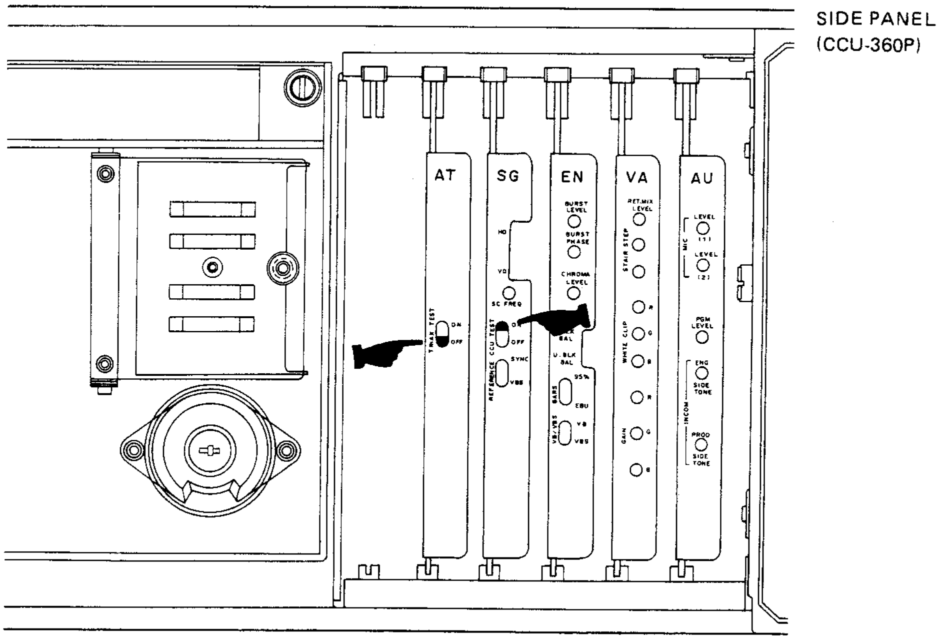

BVP-360P
TRIAX CABLE or MULTICORE CABLE
CCU-360P
+
CONTROL PANEL (BKP-3601)
VBS1
OUTPUT
TERMINAL
VECTORSCOPE
MONITOR
WAVEFORM MONITOR
75Ω

Note: Be sure that the BVP-360P, BKP-3601, BKP-3605 and BKP-3607 are adjusted completely.

5-1-3. Switch Setting Positions Before Adjustments

1. Warm up for about ten minutes.
2. Set the CCU-360P and CONTROL PANEL (BKP-3601) switches (except for especial indication) as follows:


CAP: ON
ALL LIGHT OFF
CONTROL PANEL
(BKP-3601)
SONY
CAMERA CONTROL PANEL
NOT USE
ALL OFF
ND: 0
GAIN: 0

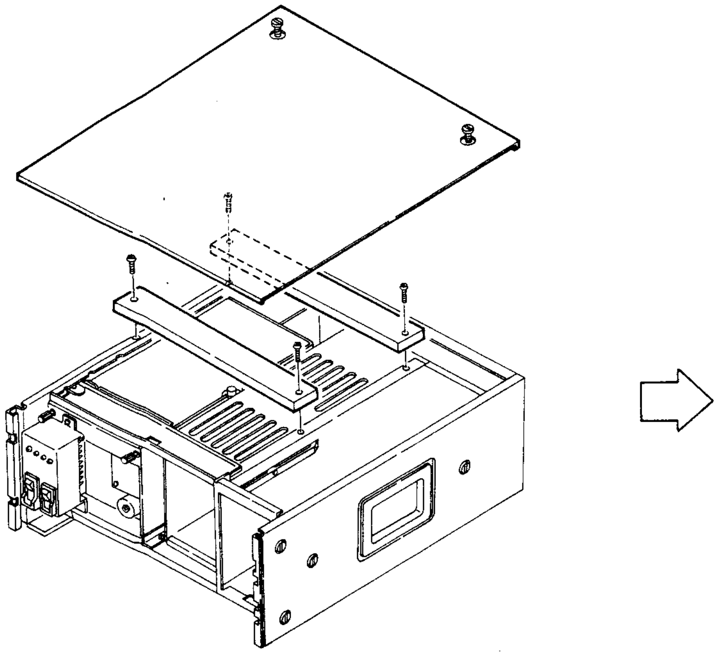

SIDE PANEL
(CCU-360P)
AT
SG
EN
VA
AU
TRIAX TEST
ON
OFF
CCU TEST
SYNC
VBS
BURST LEVEL
BURST PHASE
CHROMA LEVEL
STAIR STEP
WHITE CLIP
GAIN
LEVEL
PGM LEVEL
ENG SIDE TONE
PROD SIDE TONE

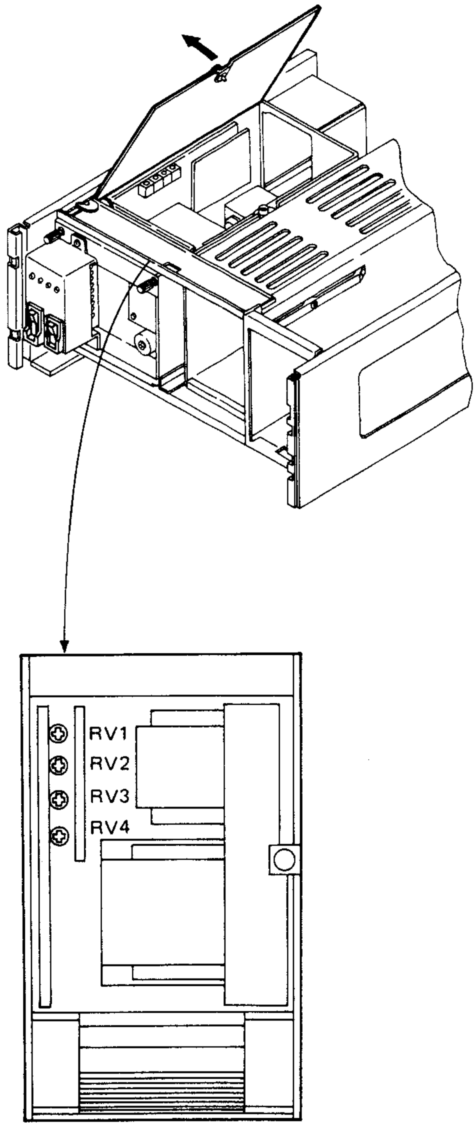
S1 (TRIAX TEST)/AT-26 board: OFF
S1 (CCU TEST)/SG-9A board: ON

5-2. POWER SUPPLY SYSTEM ADJUSTMENT

Note: This adjustment is not necessary if error is within ±1% of rated voltage.
When this adjustment is performed, all of the adjustments will be required.

Preparation : Remove the upper lid of the CCU-360P and stays.
And then, remove the upper lid of power unit.





POWER UNIT (TOP VIEW)

Measuring : Digital Voltmeter
To be exended: AU-58 board
Test point : TP1 (+9V), TP2 (+5V), TP3 (−9V), TP4 (+24V), E1 (GND) } on the EX-63 board
Adj. point : RV1 (+9V), RV2 (−9V), RV3 (+5V), RV4 (+24V) } on the PS-69 board
Specification : within ±1%

5-3. SG-9A BOARD ADJUSTMENT

Preparation : To be extended:SG-9A BOARD

5-3-1. Subcarrier Frequency Adjustment

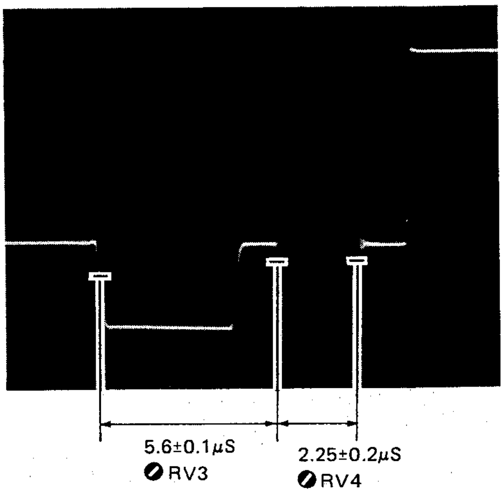
Note: Be sure no signal is supplied to INPUT terminal on the rear panel of CCU.

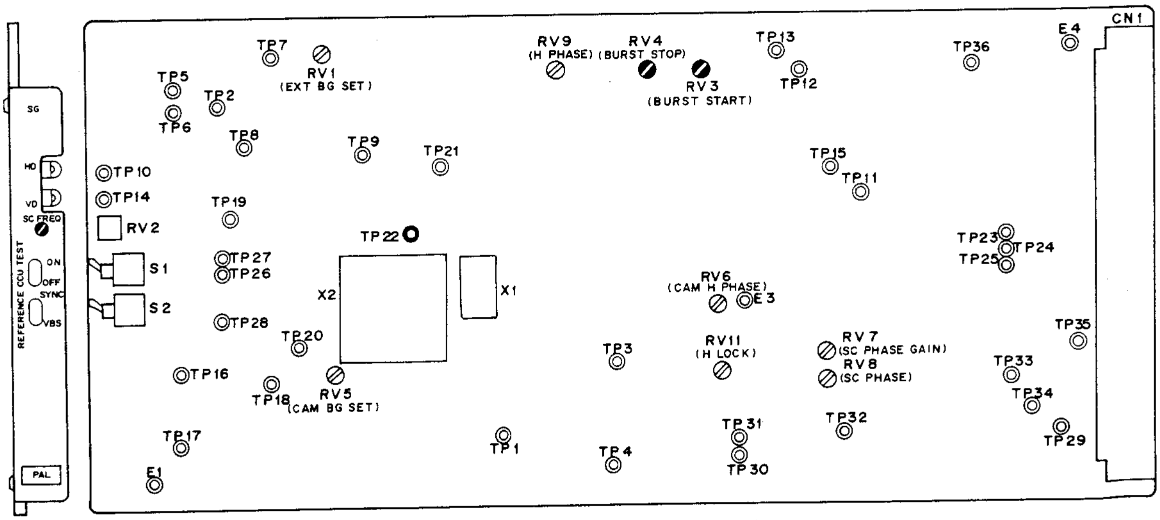
Measuring : Frequency counter, Digital Voltmeter
Test Point : TP22, TP34
Adj. Point : ⊘RV2, X2

1. Adjust the ⊘RV2 so that the DC level at TP22 is 2.5±0.1V.
2. Adjust the trimmer of X2 so that the frequency at TP34 is 4.433.618±2 Hz.

5-3-2. Burst Adjustment

Measuring : WFM
Adj. Point : ⊘RV3, ⊘RV4
Spec. : as follows




SG
HD
VD
SC FREQ
REFERENCE CCU TEST
ON
OFF
SYNC
VBS
PAL
TP7
RV1
(EXT BG SET)
TP5
TP2
TP6
TP8
TP9
TP21
TP10
TP14
RV2
TP19
S1
S2
TP27
TP26
TP28
X2
TP22
X1
TP20
TP16
TP18
RV5
(CAM BG SET)
TP17
E1
TP1
RV9
(H PHASE)
RV4
(BURST STOP)
RV3
(BURST START)
TP13
TP12
TP15
TP11
RV6
(CAM H PHASE)
E3
TP3
RV11
(H LOCK)
TP4
TP31
TP30
RV7
(SC PHASE GAIN)
RV8
(SC PHASE)
TP32
TP36
E4
CN1
TP23
TP24
TP25
TP35
TP33
TP34
TP29

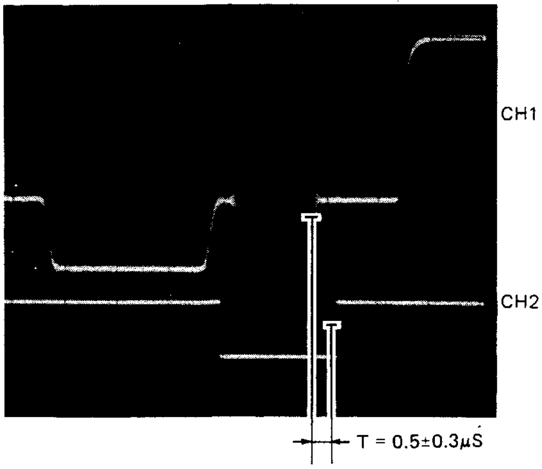
SG-9A board (component side)

5-3-3. Genlock Adjustment

Preparation : Supply VBS signal or SYNC signal to REFERENCE input terminal at the rear panel of CCU as a GENLOCK signal.
Switch over S2 (REFERENCE SYNC/VBS) on the SG-9A board, according to the GENLOCK signal.

a) EXT BURST GATE ADJUSTMENT

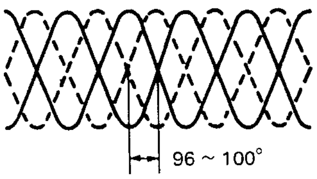
Measuring : Oscilloscope
Test Point : CH1→TP1
CH2→TP8
Adj. Point : ⊘ RV1
Spec. : T=0.5±0.3 μS

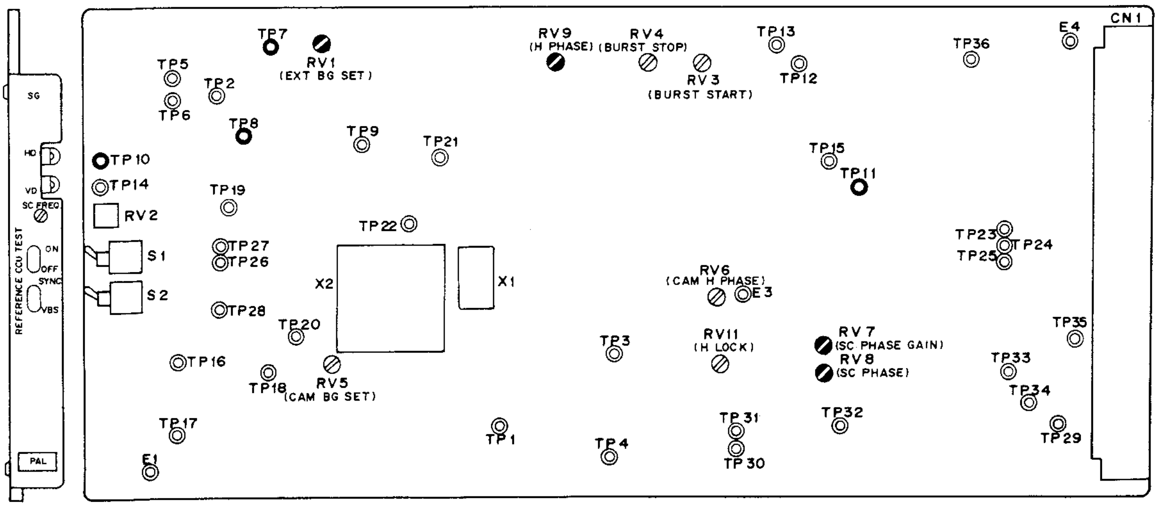


b) SC PHASE ADJUSTMENT

Preparation : ⊘ RV8→mechanical center
PHASE /CONTROL PANEL (BKP-3601)→ON
Measuring : Oscilloscope
Test Point : TP33
Trigger : TP10 (HD)
Adj. Point : ⊘ RV7

1. Adjust the ⊘ RV7 so that the SC phase can be shifted 0° to 98±2° when the SC phase control knob is turned.

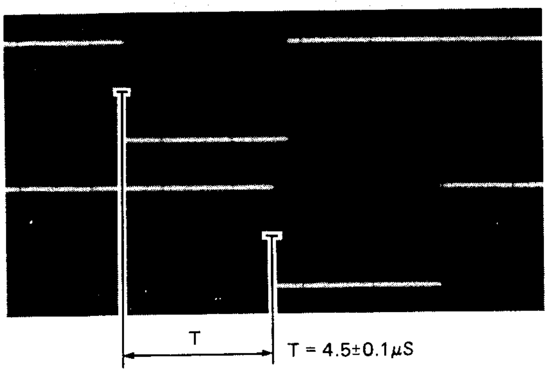



TP7
RV1 (EXT BG SET)
TP5
TP2
TP6
TP8
TP9
TP21
RV9 (H PHASE)
RV4 (BURST STOP)
RV3 (BURST START)
TP13
TP12
TP36
E4
CN1
SG
HD
VD
SC FREQ
REFERENCE CCU TEST
ON
OFF
SYNC
VBS
PAL
TP10
TP14
RV2
TP19
S1
S2
TP27
TP26
TP22
X2
X1
TP28
TP20
TP16
TP18
RV5 (CAM BG SET)
TP17
E1
TP1
TP3
TP4
TP15
TP11
RV6 (CAM H PHASE)
E3
RV11 (H LOCK)
TP31
TP30
RV7 (SC PHASE GAIN)
RV8 (SC PHASE)
TP32
TP23
TP24
TP25
TP35
TP33
TP34
TP29

SG-9A board (component side)

c) H PHASE ADJUSTMENT

Preparation : PHASE/CONTROL PANEL (BKP-3601)→ON
H PHASE control knob→fully clockwise ↻
Measuring : Oscilloscope
Test Point : CH1→TP11
CH2→TP7
Trigger : CH1
Adj. Point : ⊘RV9
Spec. : T=4.5±0.1 μS

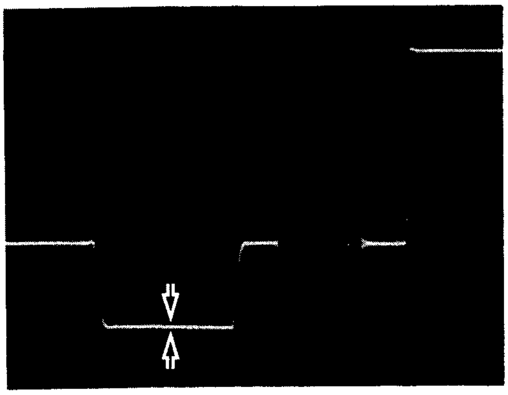


5-4. EN-31A BOARD ADJUSTMENT

5-4-1. Carrier Balance Adjustment

Preparation : BARS/CONTROL PANEL (BKP-3601)→ON
Measuring : WFM
Adj. Point : ⊘ RV30(V), ⊘ RV35(U)

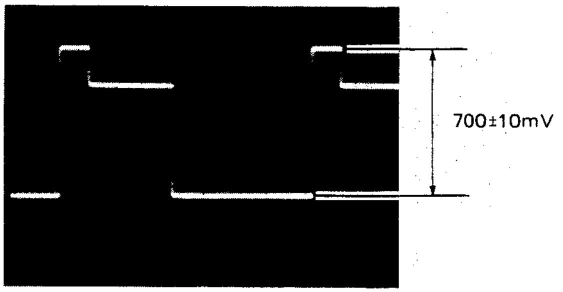
1. Adjust the ⊘RV30(V) and ⊘RV35(U) so that the carrier leakage on the SYNC Signal is minimized.



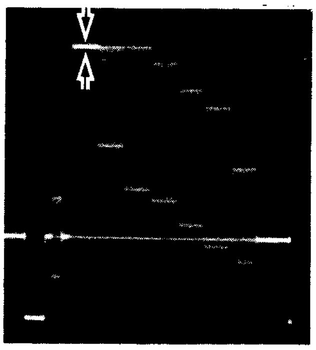
5-4-2. Color Bar Level Adjustment

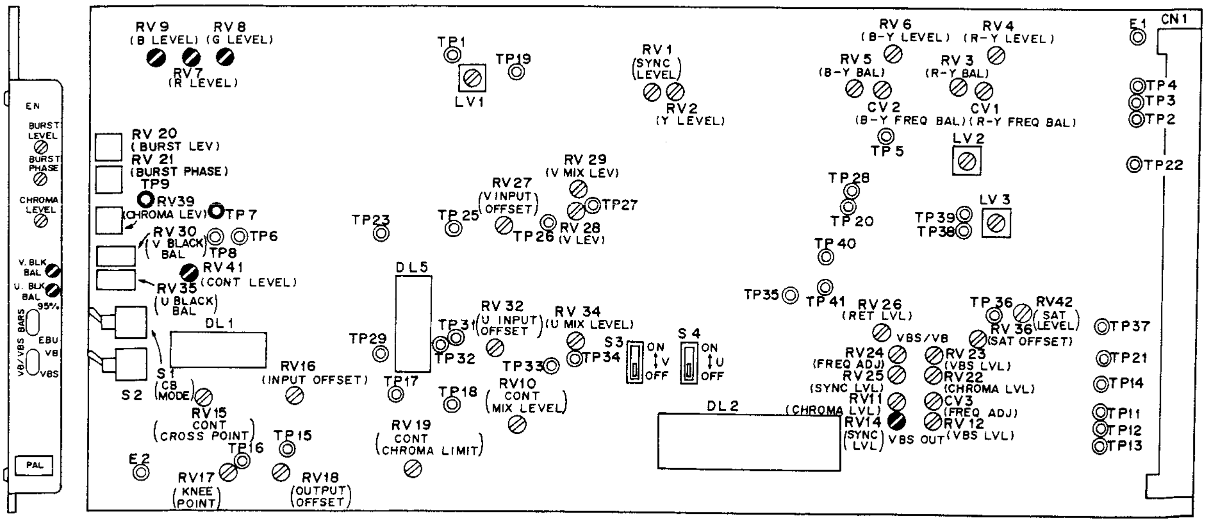
Preparation : BARS/CONTROL PANEL (BKP-3601)→ON
Measuring : Oscilloscope
WFM
Test Point : TP7
Trigger : TP10(HD)/SG-9A board
Adj. Point : ⊘RV7(R), ⊘RV8(G), ⊘RV9(B)

1. Adjust ⊘RV8 so that the signal level at TP7 is 700±10 mV.



2. Adjust ⊘ RV7 and RV9 so that the carrier leakage on the white peak is minimized on WFM.



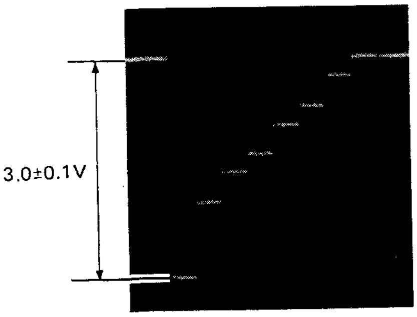

RV9 (B LEVEL)
RV8 (G LEVEL)
RV7 (R LEVEL)
TP1
TP19
LV1
RV1 (SYNC LEVEL)
RV2 (Y LEVEL)
RV6 (B-Y LEVEL)
RV4 (R-Y LEVEL)
RV5 (B-Y BAL)
RV3 (R-Y BAL)
CV2 (B-Y FREQ BAL)
CV1 (R-Y FREQ BAL)
TP5
LV2
E1
CN1
TP4
TP3
TP2
TP22
EN
BURST LEVEL
BURST PHASE
CHROMA LEVEL
V. BLK BAL
U. BLK BAL
BARS
95%
EBU
VB/VBS
VB
VBS
PAL
RV 20 (BURST LEV)
RV 21 (BURST PHASE)
TP9
RV39 (CHROMA LEV)
TP 7
RV 30 (V BLACK BAL)
TP6
TP8
RV41 (CONT LEVEL)
RV35 (U BLACK BAL)
DL1
S1 (CB MODE)
S2
RV15 (CONT CROSS POINT)
RV16 (INPUT OFFSET)
TP15
TP16
E2
RV17 (KNEE POINT)
RV18 (OUTPUT OFFSET)
TP23
TP29
DL5
TP17
RV19 (CONT CHROMA LIMIT)
TP25
RV27 (V INPUT OFFSET)
RV 29 (V MIX LEV)
TP27
TP26
RV 28 (V LEV)
TP31
RV 32 (U INPUT OFFSET)
RV 34 (U MIX LEVEL)
TP32
TP33
TP34
TP18
RV10 (CONT MIX LEVEL)
S3 ON V OFF
S4 ON U OFF
TP28
TP20
TP40
TP39
TP38
LV3
TP35
TP41
RV26 (RET LVL)
VBS/VB
TP36
RV42 (SAT LEVEL)
RV 36 (SAT OFFSET)
RV24 (FREQ ADJ)
RV25 (SYNC LVL)
RV11 (CHROMA LVL)
RV14 (SYNC LVL)
VBS OUT
RV 23 (VBS LVL)
RV22 (CHROMA LVL)
CV3 (FREQ ADJ)
RV 12 (VBS LVL)
DL2
TP37
TP21
TP14
TP11
TP12
TP13

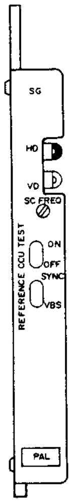
EN-31A board (component side)

5-4-3. EN Y Level Adjustment

Preparation : BARS /CONTROL PANEL (BKP-3601)→ON
Measuring : Oscilloscope
Test Point : TP9
Trigger : TP10(HD)/SG-9A board
Adj. Point : ⊘RV41

1. Adjust ⊘RV41 so that the white peak level is 3.0±0.1V.



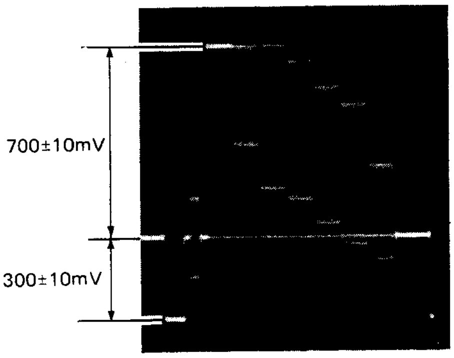

SG
HD
VD
SC FREQ
REFERENCE CCU TEST
ON
OFF
SYNC
VBS
PAL

SG-9A board
(Panel side)

5-4-4. VBS Y Level Adjustment

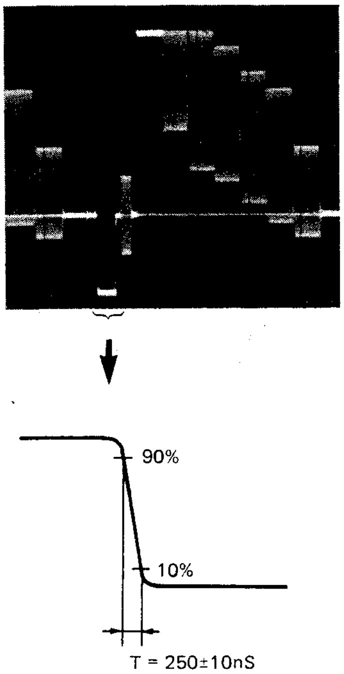
Preparation : BARS /CONTROL PANEL (BKP-3601)→ON
Measuring : WFM
Adj. Point : ⊘RV12, ⊘RV14,

1. Adjust ⊘ RV12 for level A is 700±10 mV
2. Adjust ⊘ RV14 for SYNC level is 300±10 mV.



5-4-5. VBS SYNC Phase Adjustment

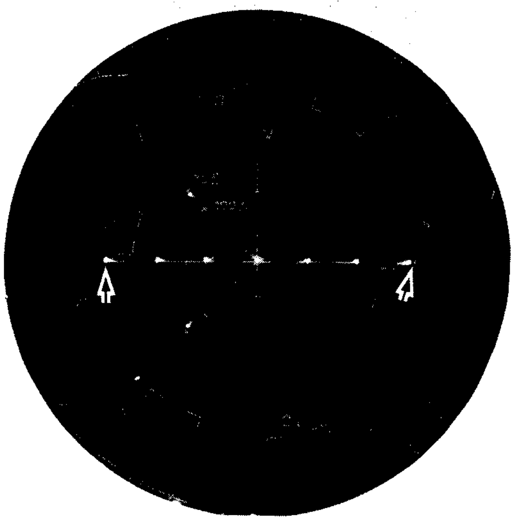
Preparation : BARS /CONTROL PANEL (BKP-3601)→ON
Measuring : Oscilloscope
Test Point : TP11
Adj. Point : ⊘LV2
Spec. : T=250±10 nS

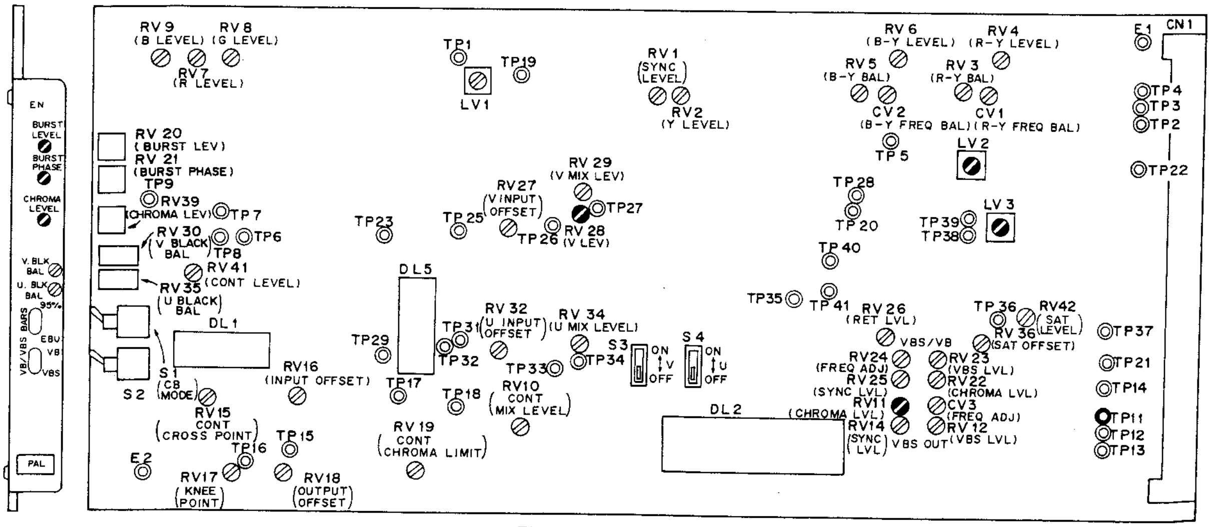


5-4-6. Color Bar Adjustment

Preparation : BARS /CONTROL PANEL (BKP-3601)→ON
⊘RV39→mechanical center
S3(I)→OFF
Measuring : Vectorscope
Adj. Point : ⊘RV11, ⊘RV20, ⊘RV21, ⊘RV28, ⊘LV3

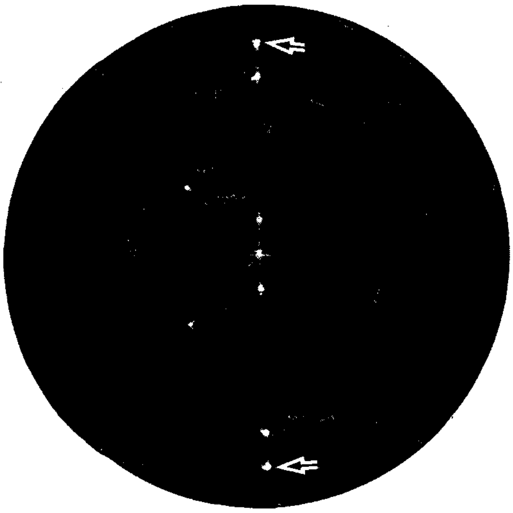
1. Adjust the PHASE control of the vectorscope so that the U signal is overlapped with U axis on the vectorscope.
2. Adjust ⊘RV11 so that the beam spots at both ends of U signal are overlapped with the scale of vectorscope.



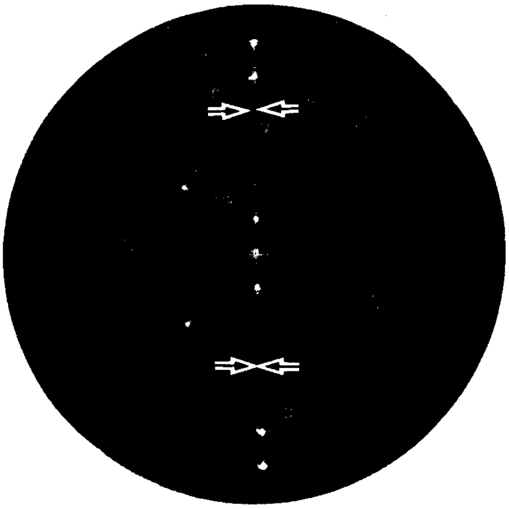

RV9 (B LEVEL)
RV8 (G LEVEL)
RV7 (R LEVEL)
TP1
TP19
LV1
RV1 (SYNC LEVEL)
RV2 (Y LEVEL)
RV6 (B-Y LEVEL)
RV4 (R-Y LEVEL)
RV5 (B-Y BAL)
RV3 (R-Y BAL)
CV2 (B-Y FREQ BAL)
CV1 (R-Y FREQ BAL)
E1
CN1
TP4
TP3
TP2
TP22
TP5
LV2
EN
BURST LEVEL
BURST PHASE
CHROMA LEVEL
V. BLK BAL
U. BLK BAL
95%
BARS
EBU
VB/VBS
VB
VBS
PAL
RV 20 (BURST LEV)
RV 21 (BURST PHASE)
TP9
RV39 (CHROMA LEV)
TP 7
RV 30 (V BLACK BAL)
TP6
TP8
RV41 (CONT LEVEL)
RV35 (U BLACK BAL)
DL1
S1 (CB MODE)
S2
RV15 (CONT CROSS POINT)
TP15
TP16
E2
RV17 (KNEE POINT)
RV18 (OUTPUT OFFSET)
RV16 (INPUT OFFSET)
TP23
TP29
DL5
TP17
TP18
RV 19 (CONT CHROMA LIMIT)
RV 29 (V MIX LEV)
RV27 (V INPUT OFFSET)
TP 25
TP27
TP26
RV 28 (V LEV)
RV 32 (U INPUT OFFSET)
RV 34 (U MIX LEVEL)
TP31
TP32
TP33
TP34
RV10 (CONT MIX LEVEL)
S3
ON
V
OFF
S4
ON
U
OFF
TP28
TP20
TP40
TP35
TP41
LV 3
TP39
TP38
RV 26 (RET LVL)
VBS/VB
RV24 (FREQ ADJ)
RV25 (SYNC LVL)
RV11 (CHROMA LVL)
RV14 (SYNC LVL)
VBS OUT
DL2
TP 36
RV42 (SAT LEVEL)
RV 36 (SAT OFFSET)
RV 23 (VBS LVL)
RV22 (CHROMA LVL)
CV3 (FREQ ADJ)
RV 12 (VBS LVL)
TP37
TP21
TP14
TP11
TP12
TP13

EN-31A board (component side)

3. S4(U)→OFF
   S3(V)→ON
4. Adjust the PHASE control of the vectorscope so that the V signal is overlapped with V axis of vectorscope.
5. Adjust ⊘ RV28 so that the beam spots at both ends of V signal are overlapped with the scale of vectorscope.

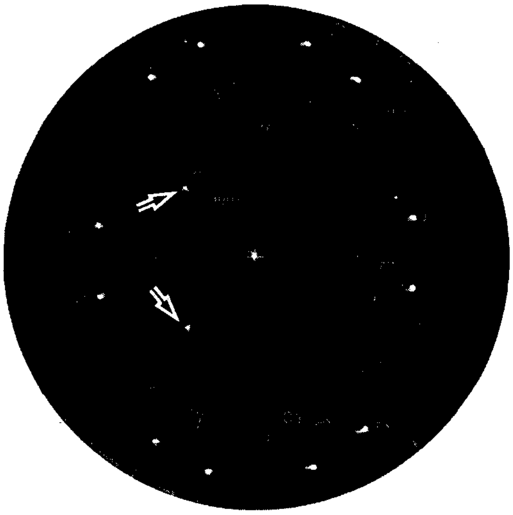


6. S3(V)→OFF
   S4(U)→ON
7. Adjust the PHASE control of the vectorscope so that the U signal is overlapped with U axis on vectorscope.
8. S3(V)→ON
   S4(U)→OFF
9. Adjust ⊘ LV3 so that the V signal is overlapped with V axis.

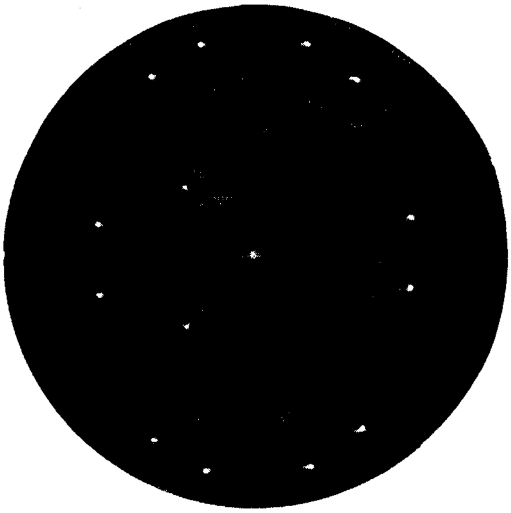


10. Repeat Step 6. through Step 9 untill the U and V signals are crossed at right angle.

11. S4(U)→ON
12. Adjust ⊘ RV20 and ⊘ RV21 so that the BURST signal is overlapped with 75% scale.

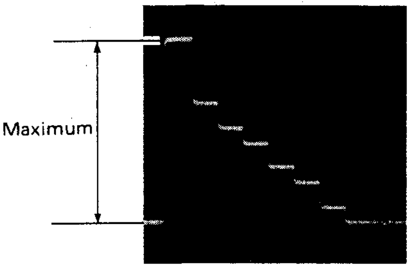


13. Confirm that the all bright spots of color bar signal are located in the specified scale on the WFM. If not, readjust this adjustment.



5-4-7. Return Video Level Adjustment

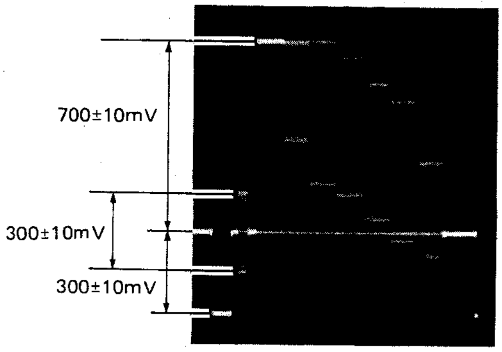
Preparation : [BARS]/CONTROL PANEL (BKP-3601)→ON
Measuring : Oscilloscope
Test Point : TP22
Adj. Point : ⊘RV26
Trigger : TP10(HD)/SG-9A board
Spec. : Maximum



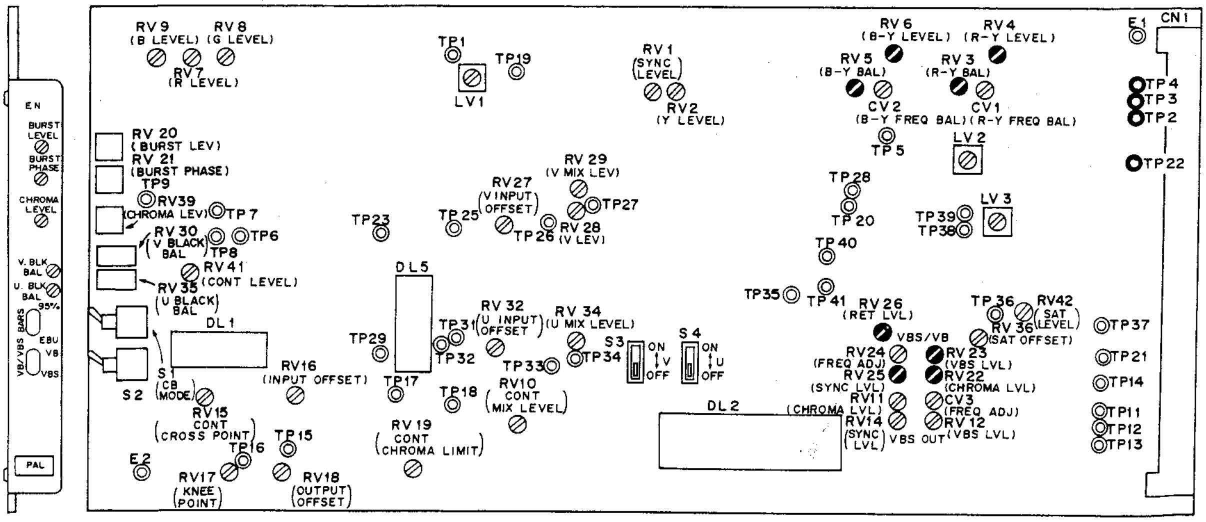
5-4-8. VBS/VB Level Adjustment

Preparation : Connect the WFM to VBS4/VB terminal at the rear panel of CCU.
[BARS]/CONTROL PANEL (BKP-3601)→ON
Measuring : WFM
Adj. point : ⊘RV22, ⊘RV23, ⊘RV25

1. Adjust ⊘ RV23 so that the white peak level is 700±10 mV.
2. Adjust ⊘ RV22 so that the BURST level is 300±10 mV.
3. Adjust ⊘ RV25 so that the SYNC level is 300±10 mV.



Note: After this adjustment is completed, connect the WFM to VBS1 terminal.


RV9 RV8 (B LEVEL) (G LEVEL)
RV7 (R LEVEL)
TP1
TP19
LV1
RV1 (SYNC LEVEL)
RV2 (Y LEVEL)
RV6 (B-Y LEVEL)
RV4 (R-Y LEVEL)
RV5 (B-Y BAL)
RV3 (R-Y BAL)
CV2 (B-Y FREQ BAL)
CV1 (R-Y FREQ BAL)
E1
CN1
TP4
TP3
TP2
TP22
TP5
LV2
EN
BURST LEVEL
BURST PHASE
CHROMA LEVEL
V. BLK BAL
U. BLK BAL
BARS
95%
EBU
VB/VBS
VB
VBS
PAL
RV 20 (BURST LEV)
RV 21 (BURST PHASE)
TP9
RV39 (CHROMA LEV)
TP 7
RV 30 (V BLACK BAL)
TP6
TP8
RV41
RV35 (CONT LEVEL)
(U BLACK BAL)
DL 1
RV 29 (V MIX LEV)
RV27 (V INPUT OFFSET)
TP27
TP23
TP25
TP26
RV 28 (V LEV)
TP28
TP 20
TP40
LV 3
TP39
TP38
DL5
RV 32 (U INPUT OFFSET)
RV 34 (U MIX LEVEL)
TP31
TP29
TP32
TP33
TP34
S3
S4
ON V OFF
ON U OFF
RV16 (INPUT OFFSET)
S1
S2 (CB MODE)
TP17
TP18
RV10 (CONT MIX LEVEL)
RV15 (CONT CROSS POINT)
TP15
TP16
RV 19 (CONT CHROMA LIMIT)
E2
RV17 (KNEE POINT)
RV18 (OUTPUT OFFSET)
TP35
TP41
RV 26 (RET LVL)
TP36
RV42 (SAT LEVEL)
RV 36 (SAT OFFSET)
VBS/VB
RV24 (FREQ ADJ)
RV 23 (VBS LVL)
RV25 (SYNC LVL)
RV22 (CHROMA LVL)
RV11 (CHROMA LVL)
CV3 (FREQ ADJ)
RV14 (SYNC LVL)
RV 12 (VBS LVL)
VBS OUT
DL 2
TP37
TP21
TP14
TP11
TP12
TP13

EN−31A board (component side)

5-4-9. Betacam Output Adjustment

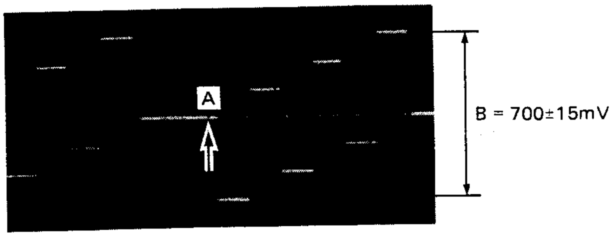
Note: If the output terminal at rear panel of CCU is not terminated by 75-ohm terminater, waveform level is doubled.

Preparation : BARS /CONTROL PANEL (BKP-3601)→ON
Measuring : Oscilloscope
Trigger : TP10(HD)/SG-9A board

a) B-Y ADJUSTMENT

Test Point : TP3
Adj. point : ⊘RV5, ⊘RV6

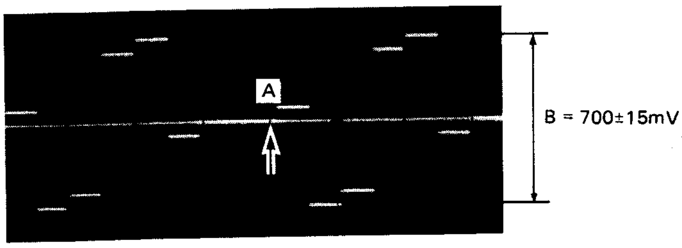
1. Adjust ⊘ RV5 so that the portion A is flat.
2. Adjust ⊘ RV6 so that the level B is 700±15 mVp-p.
3. Repeat Step 1 and Step 2 until the both specifications are satisfied.



b) R-Y ADJUSTMENT

Test Point : TP4
Adj. point : ⊘RV3, ⊘RV4

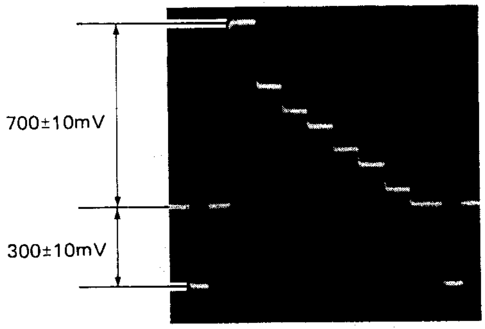
1. Adjust ⊘ RV3 so that the portion A is flat.
2. Adjust ⊘ RV4 so that the level B is 700±15 mVp-p.
3. Repeat Step 1 and Step 2 until the both specifications are satisfied.



c) Y ADJUSTMENT

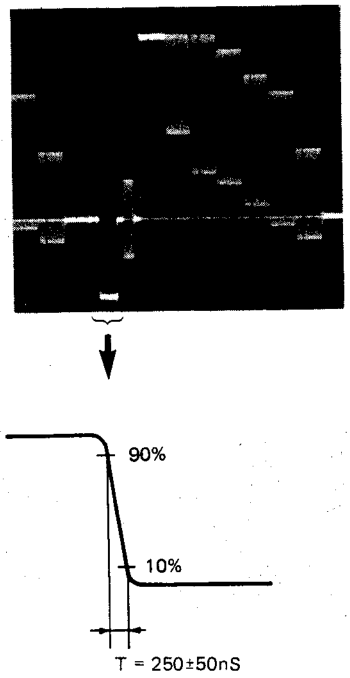
Test Point : TP2
Adj. point : ⊘RV1, ⊘RV2,

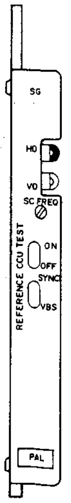
1. Adjust ⊘ RV1 for SYNC level is 300±10 mV.
2. Adjust ⊘ RV2 for white peak level is 700±10 mV.



d) SYNC PHASE ADJUSTMENT

Test Point : TP2
Adj. Point : ⊘LV1
Spec. : T=250±50 nS





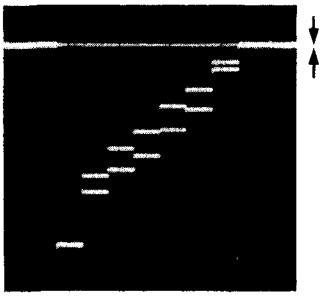
SG-9A board
(Panel side)

5-4-10. Contrast Adjustment

Preparation : S1(BARS)/EN-31A board→EBU
BARS/CONTROL PANEL (BKP-3601)→ON
Measuring : Oscilloscope (ALT mode)
Test Point : CH1→TP15
CH2→TP16

a) INPUT OFFSET ADJUSTMENT

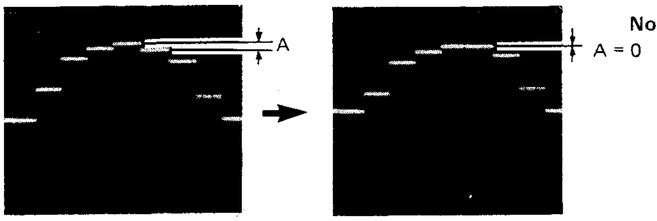
1. Adjust ⊘ RV16 so that the black level at CH1 and CH2 are equal.



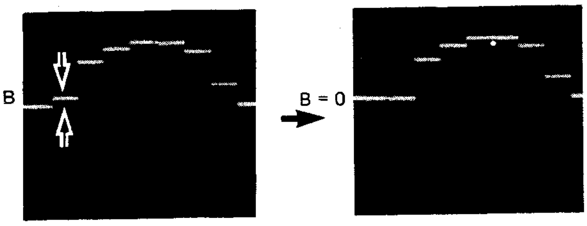
b) CROSS POINT and KNEE POINT ADJUSTMENTS

Preparation : ⊘ RV15→mechanical center.
Invert CH2 and set the oscilloscope to ADD mode.

1. Adjust ⊘ RV17 so that the level A is zero.



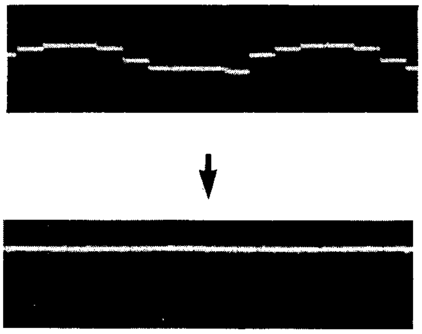
2. Adjust ⊘ RV15 so that the level B is zero.



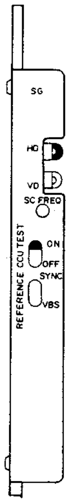
c) OUTPUT OFFSET ADJUSTMENT

Preparation : S1(CCU TEST)/SG-9A board→ON
⊘ RV19→fully clockwise ↻
BARS/CONTROL PANEL (BKP-3601)→OFF
CONTRAST/CONTROL PANEL→ON
Test Point : TP17
Adj. Point : ⊘ RV18

1. Turn the CONTRAST control knob on the control panel BKP-3601 fully counterclockwise. ("0" is indicated on LCD of BKP-3601.)
2. Adjust ⊘ RV18 so that the waveform signal at TP17 is flat.



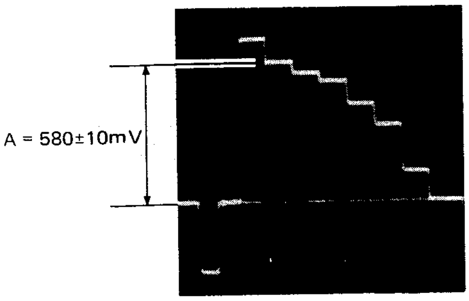
Note: After this adjustment is completed, carry out 5-4-16. CHROMA LIMIT ADJUSTMENT.

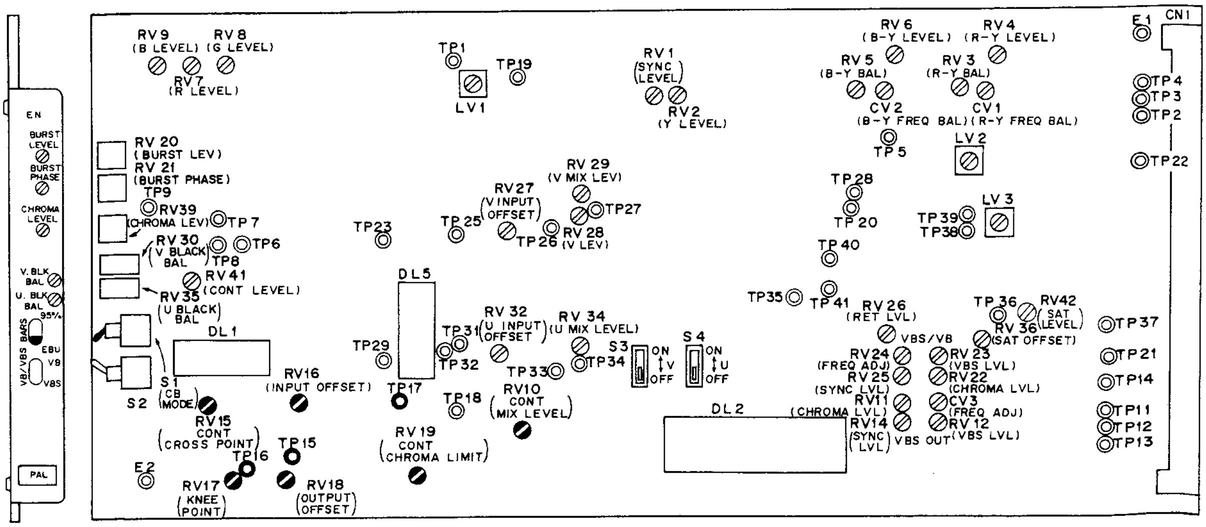


SG-9A board
(Panel side)

5-4-11. Contrast Mix Level Adjustment

Preparation	: S1 (CCU TEST)/SG-9A board→ON BARS/CONTROL PANEL (BKP-3601)→OFF CONTRAST/CONTROL PANEL (BKP-3601)→ON Turn the CONTRAST control knob on the BKP-3601 fully clockwise. ("+99" is indicated on LCD of BKP-3601)
Measuring	: WFM (Y mode)
Adj. Point	: ⊘ RV10
Spec.	: A=580±10 mV



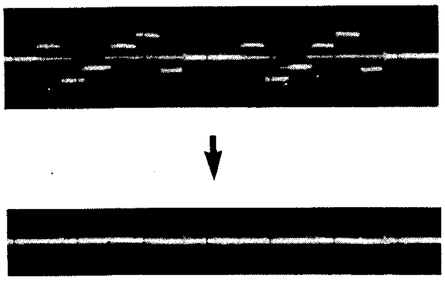

RV9 (B LEVEL)
RV8 (G LEVEL)
RV7 (R LEVEL)
TP1
TP19
LV1
RV1 (SYNC LEVEL)
RV2 (Y LEVEL)
RV6 (B-Y LEVEL)
RV4 (R-Y LEVEL)
RV5 (B-Y BAL)
RV3 (R-Y BAL)
CV2
CV1
(B-Y FREQ BAL) (R-Y FREQ BAL)
TP5
LV2
E1
CN1
TP4
TP3
TP2
TP22
RV20 (BURST LEV)
RV21 (BURST PHASE)
TP9
RV39 (CHROMA LEV)
TP7
RV30 (V BLACK BAL)
TP6
TP8
RV41
RV35 (CONT LEVEL)
(U BLACK BAL)
DL1
S1 (CB MODE)
S2
RV15 (CONT CROSS POINT)
TP16
TP15
E2
RV17 (KNEE POINT)
RV18 (OUTPUT OFFSET)
RV16 (INPUT OFFSET)
TP17
TP23
TP29
DL5
RV29 (V MIX LEV)
RV27 (V INPUT OFFSET)
TP25
TP26
TP27
RV28 (V LEV)
RV32 (U INPUT OFFSET)
RV34 (U MIX LEVEL)
TP31
TP32
TP33
TP34
S3
S4
ON
V
OFF
ON
U
OFF
TP18
RV10 (CONT MIX LEVEL)
RV19 (CONT CHROMA LIMIT)
TP28
TP20
TP40
TP39
TP38
LV3
TP35
TP41
RV26 (RET LVL)
VBS/VB
RV24 (FREQ ADJ)
RV25 (SYNC LVL)
RV11 (CHROMA LVL)
RV14 (SYNC LVL)
VBS OUT
DL2
TP36
RV42 (SAT LEVEL)
RV36 (SAT OFFSET)
RV23 (VBS LVL)
RV22 (CHROMA LVL)
CV3 (FREQ ADJ)
RV12 (VBS LVL)
TP37
TP21
TP14
TP11
TP12
TP13
EN
BURST LEVEL
BURST PHASE
CHROMA LEVEL
V.BLK BAL
U.BLK BAL
95%
VB/VBS BARS
EBU
VB
VBS
PAL

EN-31A board (component side)

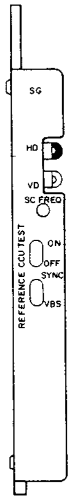
5-4-12. Saturation Control Adjustment

Preparation : S1 (CCU TEST)/SG-9A board→ON
BARS/CONTROL PANEL (BKP-3601)→OFF
CONTRAST/CONTROL PANEL→OFF
SATURATION/CONTROL PANEL→ON
Adjust the SATURATION control knob on the BKP-3601 so that the LCD of BKP-3601 indicates "SATURATION 0"
Measuring : Oscilloscope
Test Point : TP26
Trigger : TP10(HD)/SG-9A board
Adj. Point : ⊘RV36

1. Adjust ⊘RV36 so that the waveform signal at TP26 is flat.



Note: After this adjustment is completed, set the SATURATION sw to OFF.

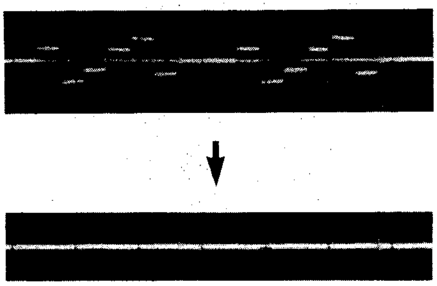


SG-9A board
(Panel side)

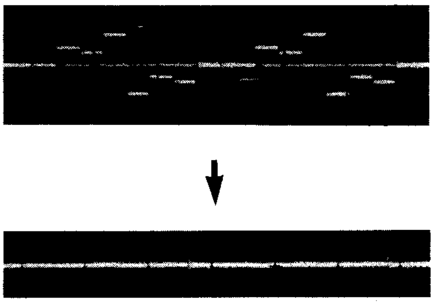
5-4-13. V, U Input Offset Adjustment

Preparation : S1 (CCU TEST)/SG-9A board→ON
BARS/CONTROL PANEL (BKP-3601)→OFF
CONTRAST/CONTROL PANEL (BKP-3601)→ON
Turn the CONTRAST control knob on the BKP-3601 fully counterclockwise. ("0" is indicated on LCD of BKP-3601.)
Measuring : Oscilloscope
Test Point : TP26, TP33
Trigger : TP10(HD)/SG-9A board
Adj. Point : ⊘RV27, ⊘RV32

1. Adjust ⊘RV27 so that the waveform signal at TP26 is flat.



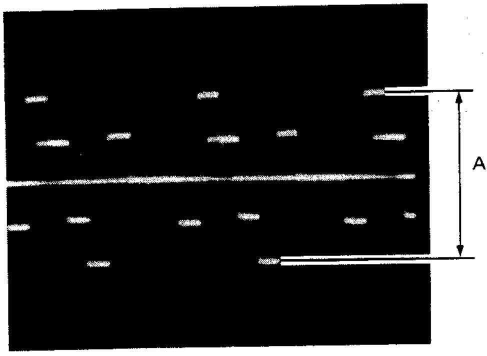
2. Adjust ⊘RV32 so that the waveform signal at TP33 is flat.



5-4-14. V Mix Level Adjustment

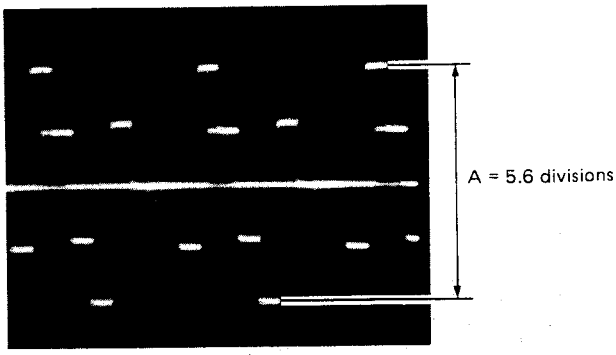
Preparation : S1 (CCU TEST)/SG-9A board→ON
BARS/CONTROL PANEL (BKP-3601)→OFF
CONTRAST/CONTROL PANEL (BKP-3601)→ON
Turn the CONTRAST control knob on the BKP-3601 fully counterclockwise.
("0" is indicated on LCD of BKP-3601.)
Measuring : Oscilloscope
Test Point : TP27
Trigger : TP10(HD)/SG-9A board
Adj. Point : ⊘ RV29

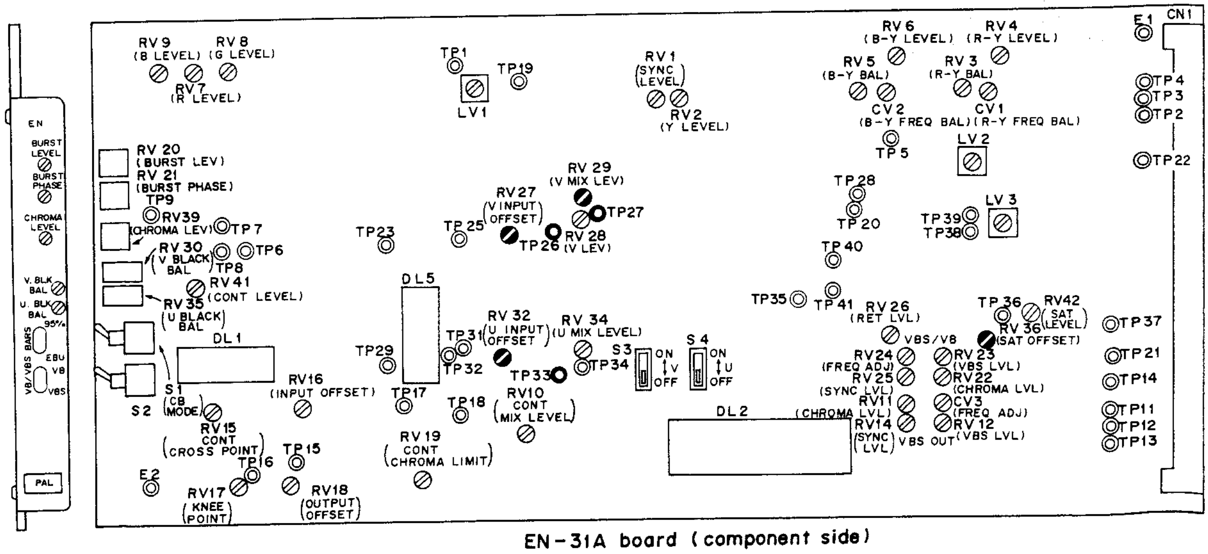
1. Turn the gain control knob of the oscilloscope so that the peak level A indicates 4 divisions on the scale of the oscilloscope.



2. Turn the CONTRAST knob on the BKP-3601 fully clockwise.

3. Adjust ⊘ RV29 so that the peak level A indicates 5.6 divisions on the scale.



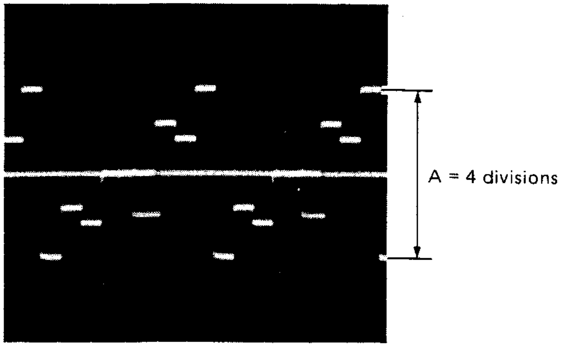

RV9 (B LEVEL)
RV8 (G LEVEL)
RV7 (R LEVEL)
TP1
TP19
LV1
RV1 (SYNC LEVEL)
RV2 (Y LEVEL)
RV6 (B-Y LEVEL)
RV4 (R-Y LEVEL)
RV5 (B-Y BAL)
RV3 (R-Y BAL)
CV2 (B-Y FREQ BAL)
CV1 (R-Y FREQ BAL)
TP5
LV2
E1
CN1
TP4
TP3
TP2
TP22
EN
BURST LEVEL
BURST PHASE
CHROMA LEVEL
V. BLK BAL
U. BLK BAL
95%
BARS
EBU
VB/VBS
VB
VBS
PAL
RV 20 (BURST LEV)
RV 21 (BURST PHASE)
TP9
RV39 (CHROMA LEV)
TP7
RV 30 (V BLACK BAL)
TP6
TP8
RV41 (CONT LEVEL)
RV35 (U BLACK BAL)
DL1
S1 (CB MODE)
S2
RV15 (CONT CROSS POINT)
TP15
TP16
E2
RV17 (KNEE POINT)
RV18 (OUTPUT OFFSET)
RV16 (INPUT OFFSET)
TP23
TP29
DL5
TP17
RV19 (CONT CHROMA LIMIT)
RV 29 (V MIX LEV)
RV27 (V INPUT OFFSET)
TP25
TP27
TP26
RV 28 (V LEV)
RV 32 (U INPUT OFFSET)
RV 34 (U MIX LEVEL)
TP31
TP32
TP33
TP34
TP18
RV10 (CONT MIX LEVEL)
S3
ON
V
OFF
S4
ON
U
OFF
TP28
TP20
TP39
TP38
LV 3
TP 40
TP35
TP41
RV 26 (RET LVL)
VBS/VB
TP 36
RV42 (SAT LEVEL)
RV 36 (SAT OFFSET)
RV24 (FREQ ADJ)
RV25 (SYNC LVL)
RV11 (CHROMA LVL)
RV14 (SYNC LVL)
VBS OUT
RV 23 (VBS LVL)
RV22 (CHROMA LVL)
CV3 (FREQ ADJ)
RV 12 (VBS LVL)
DL2
TP37
TP21
TP14
TP11
TP12
TP13

EN-31A board (component side)

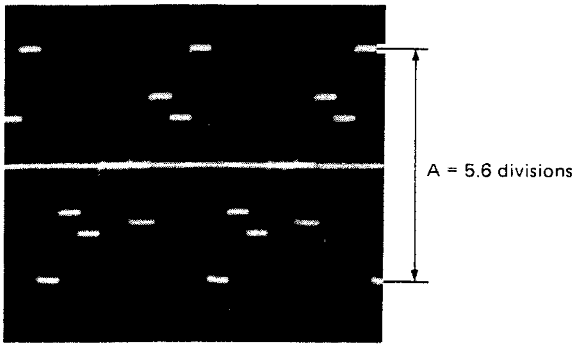
5-4-15. U Mix Level Adjustment

Preparation : S1 (CCU TEST)/SG-9A board→ON
BARS/CONTROL PANEL (BKP-3601)→OFF
CONTRAST/CONTROL PANEL (BKP-3601)→ON
Turn the CONTRAST control knob on the BKP-3601 fully counterclockwise to contrast is minimized. ("0" is indicated on LCD of BKP-3601.)
Measuring : Oscilloscope
Test Point : TP34
Trigger : TP10(HD)/SG-9A board
Adj. Point : ⊘ RV34

1. Turn the gain control knob of the oscilloscope so that the peak level A indicates 4 divisions on the scale on the oscilloscope.



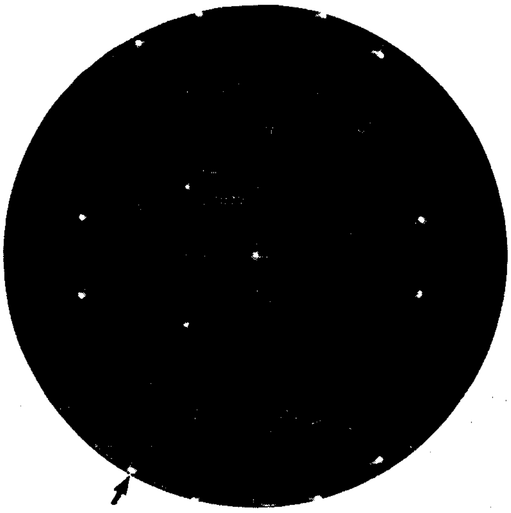
2. Turn the CONTRAST knob on the BKP-3601 fully clockwise.
3. Adjust ⊘ RV34 so that the peak level A indicates 5.6 divisions on the scale.

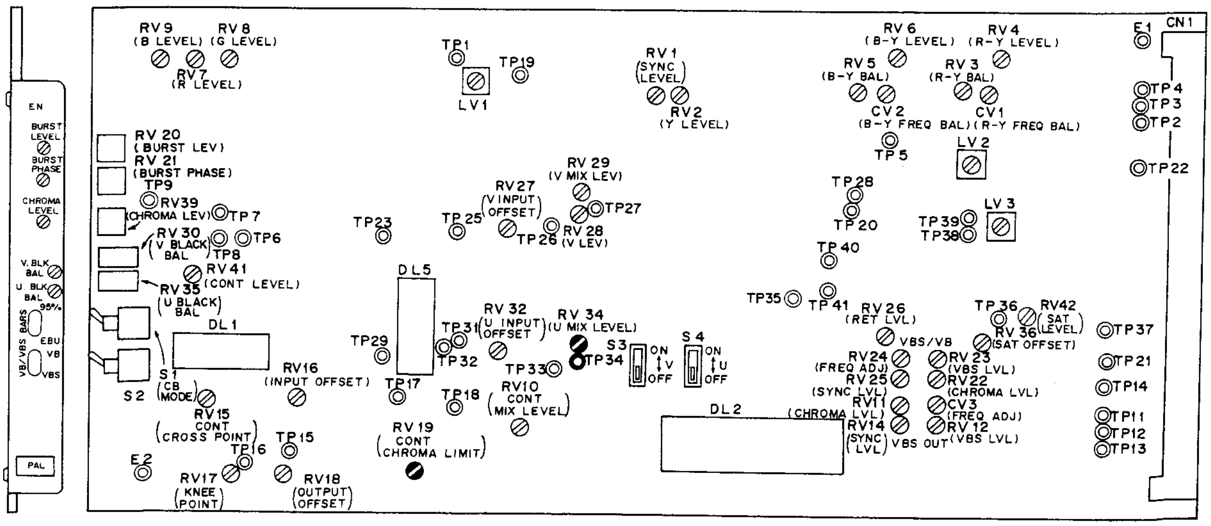


5-4-16. Contrast Chroma Limit Adjustment

Preparation : S1 (CCU TEST)/SG-9A board→ON
BARS/CONTROL PANEL (BKP-3601)→OFF
CONTRAST/CONTROL PANEL (BKP-3601)→ON
Turn the CONTRAST control knob on the BKP-3601 fully clockwise. ("+99" is indicated on LCD of BKP-3601.)
Measuring : Vectorscope
Adj. Point : ⊘ RV19

1. Adjust ⊘ RV19 so that the beam spot of green is overlapped with outside scale on the vectorscope.



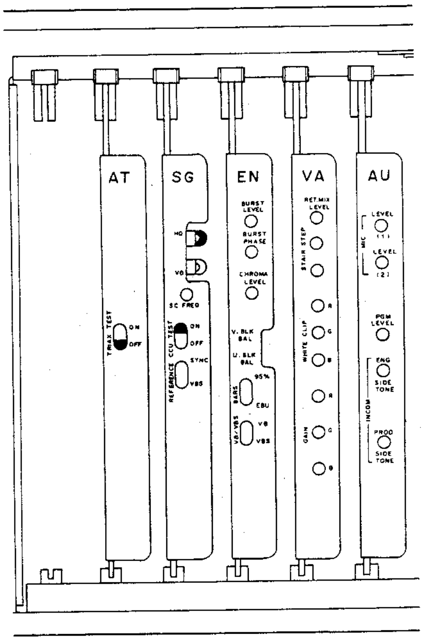


EN-31A board (component side)

5-5. VA-28 BOARD ADJUSTMENT

Note: EN-31A board adjustment should be performed, before VA-28 board adjustment.

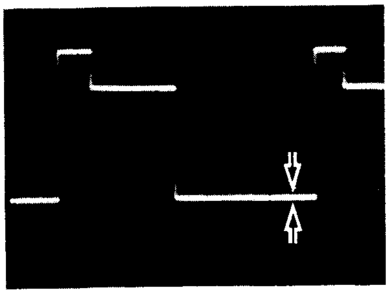
Preparation : S1 (CCU TEST)/SG-9A board→ON
S1 (TRIAX TEST)/AT26 board→OFF
BARS/CONTROL PANEL (BKP-3601)→OFF
EXT. Board : VA-28 board
Trigger : TP10(HD)/SG-9A board

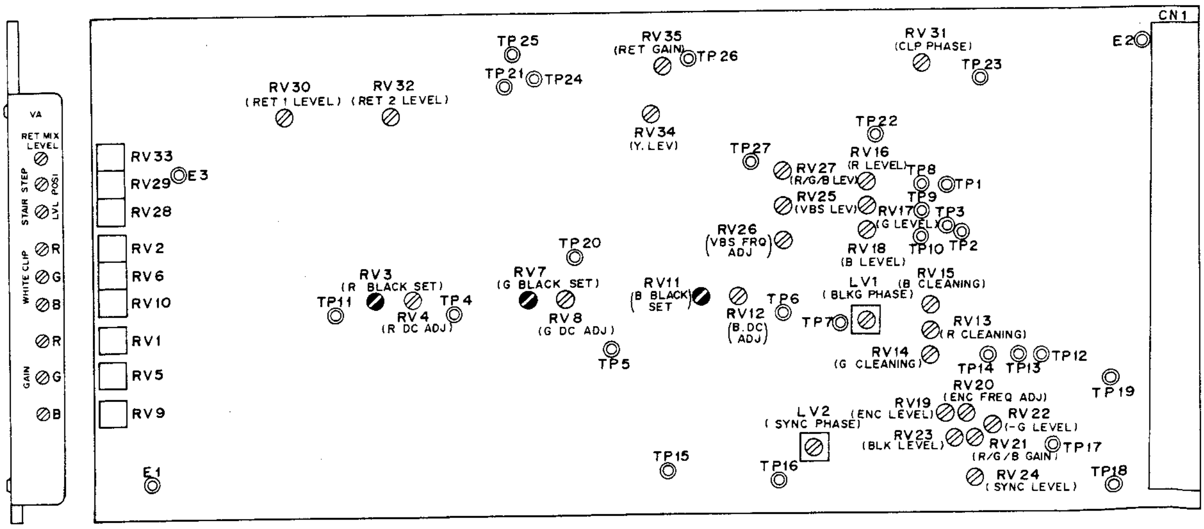

AT
SG
EN
VA
AU
TRIAX TEST
ON
OFF
HD
VD
SC FREQ
REFERENCE
CCU TEST
ON
OFF
SYNC
VBS
BURST LEVEL
BURST PHASE
CHROMA LEVEL
V. BLK BAL
U. BLK BAL
BARS
95%
EBU
VB/VBS
VB
VBS
RET MIX LEVEL
STAIR STEP
WHITE CLIP
R
G
B
GAIN
R
G
B
MIC
LEVEL (1)
LEVEL (2)
PGM LEVEL
ENG SIDE TONE
INCOM
PROD SIDE TONE

5-5-1. Black Set Adjustment

Measuring : Oscilloscope
Test Point : TP12(R)
TP13(G)
TP14(B)
Adj. Point : ⊘RV3(R)
⊘RV7(G)
⊘RV11(B)

1. Adjust ⊘RV3, ⊘RV7 and ⊘RV11 so that the black levels at TP12, TP13 and TP14 are flat, respectively.



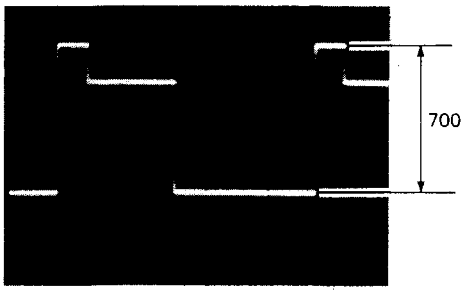


VA-28 board (component side)

5-5-2. Gain Adjustment (1)

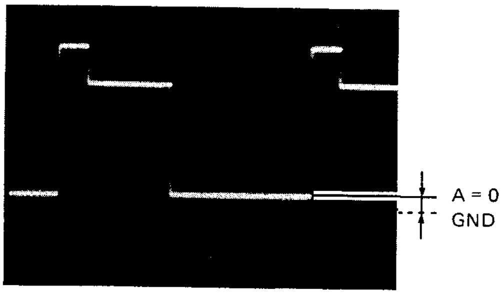
Note: If the output terminal at rear panel of CCU is not terminated by 75-ohm terminater, the signal level is doubled.

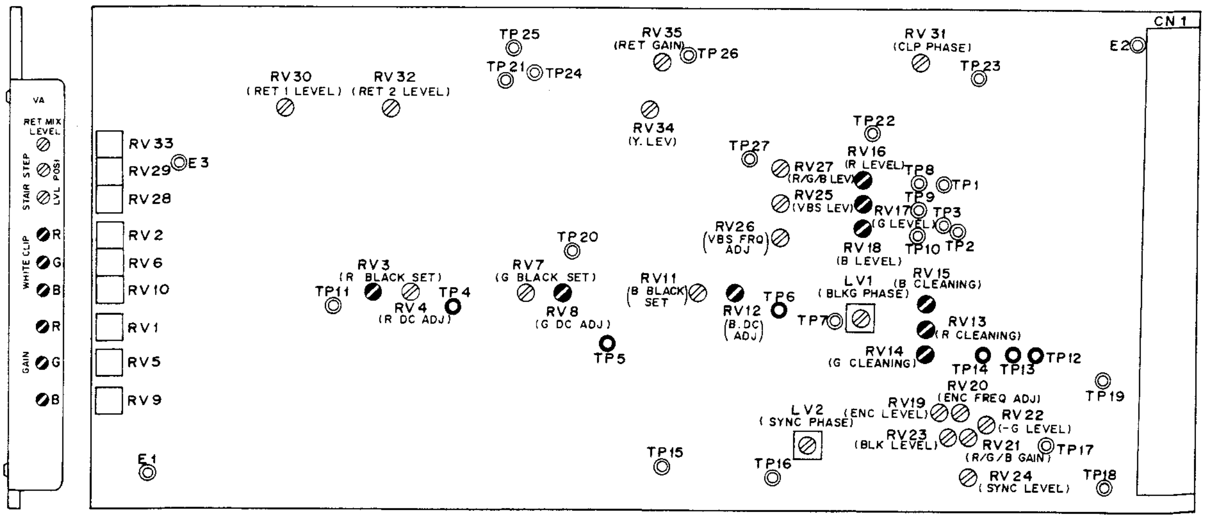
Measuring : Oscilloscope
Test Point : TP12(R)
TP13(G)
TP14(B)
Adj. Point : ⊘ RV1(R)
⊘ RV5(G)
⊘ RV9(B)
Spec. : V=700±10 mV



5-5-3. DC Set Adjustment

Measuring : Oscilloscope
Test Point : TP12(R)
TP13(G)
TP14(B)
Adj. Point : ⊘ RV4(R)
⊘ RV8(G)
⊘ RV12(B)
Spec. : A=0



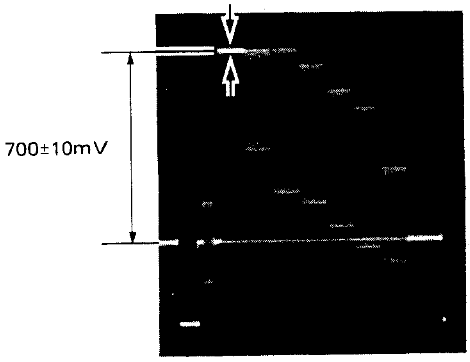

VA
RET MIX LEVEL
STAIR STEP
LVL POSI
WHITE CLIP
R
G
B
GAIN
R
G
B
RV33
RV29
E3
RV28
RV2
RV6
RV10
RV1
RV5
RV9
E1
RV30
(RET 1 LEVEL)
RV32
(RET 2 LEVEL)
TP25
TP21
TP24
RV35
(RET GAIN)
TP26
RV34
(Y. LEV)
RV31
(CLP PHASE)
TP23
E2
CN1
TP22
TP27
RV16
(R LEVEL)
TP8
TP1
RV27
(R/G/B LEV)
RV25
(VBS LEV)
TP9
RV17
(G LEVEL)
TP3
RV26
(VBS FRQ ADJ)
RV18
(B LEVEL)
TP10
TP2
TP20
RV3
(R BLACK SET)
TP11
RV4
(R DC ADJ)
TP4
RV7
(G BLACK SET)
RV8
(G DC ADJ)
TP5
RV11
(B BLACK SET)
RV12
(B.DC ADJ)
TP6
TP7
LV1
(BLKG PHASE)
RV15
(B CLEANING)
RV13
(R CLEANING)
RV14
(G CLEANING)
TP14
TP13
TP12
RV20
(ENC FREQ ADJ)
TP19
RV19
(ENC LEVEL)
RV22
(-G LEVEL)
LV2
(SYNC PHASE)
RV23
(BLK LEVEL)
RV21
(R/G/B GAIN)
TP17
TP15
TP16
RV24
(SYNC LEVEL)
TP18

VA-28 board (component side)

5-5-4. Gain Adjustment (2)

Measuring : WFM
Adj. Point : ⊘RV16, ⊘RV17, ⊘RV18

1. Adjust ⊘RV16, ⊘RV17 and ⊘RV18 so that the white peak on WFM is 700±10 mV and the carrier leakage is minimized.

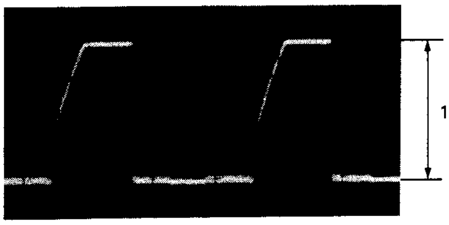


5-5-5. Cleaning and White Clip Adjustment

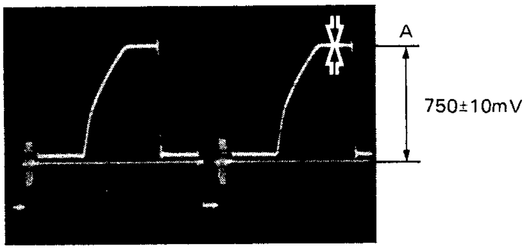
Note: Be sure that the GAIN ADJUSTMENT (1) and (2) are performed before this adjustment.

Preparation : S1 (CCU TEST)/SG-9A board→OFF
TEST/CONTROL PANEL (BKP-3601)→ON
GAIN/CONTROL PANEL→+6 dB
⊘RV1→R.GAIN Fully clockwise ↻
⊘RV5→G.GAIN Fully clockwise ↻
⊘RV9→B.GAIN Fully clockwise ↻
⊘RV2→Fully counterclockwise ↺
⊘RV6→Fully counterclockwise ↺
⊘RV10→Fully counterclockwise ↺
Measuring : Oscilloscope, WFM
Test Point : TP4(R)
TP5(G)
TP6(B)
Adj. Point : ⊘RV2, ⊘RV13 (R)
⊘RV6, ⊘RV14 (G)
⊘RV10, ⊘RV15 (B)

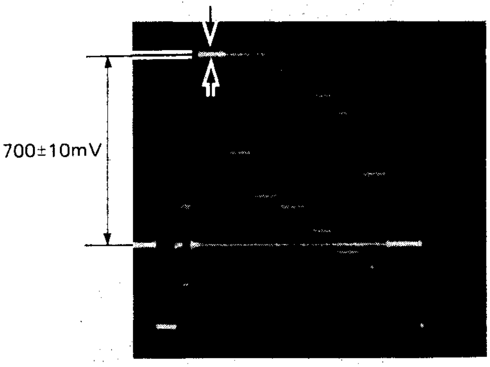
1. Adjust ⊘RV13, ⊘RV14 and ⊘RV15 so that the each signal at TP4, TP5 and TP6 is clipped at 1.7±0.1V.

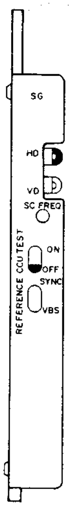


2. Adjust ⊘RV2, ⊘RV6 and ⊘RV10 so that the portion A of waveform on the WFM is 750±10 mV and carrier leakage is minimized.



3. S1(CCU TEST)/SG-9A board→ON
4. Adjust ⊘RV1, ⊘RV5 and ⊘RV9 so that the white peak of waveform on the WFM is 700±10 mV and carrier leakage is minimized.





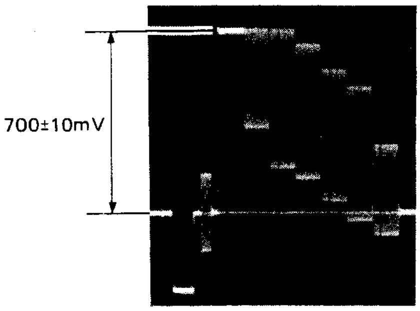
SG-9A board
(Panel side)

5-5-6. WF Output Adjustment

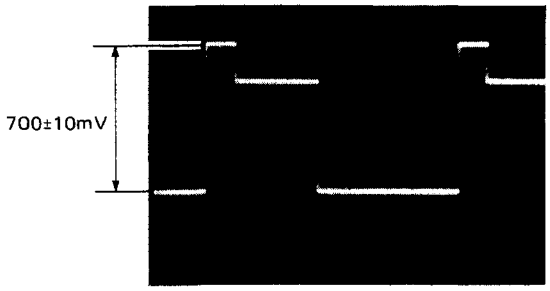
Note: If the output terminal at rear panel of CCU is not terminated by 75-ohm terminater, the signal level is doubled.

Preparation : WAVEFORM/CONTROL PANEL→ENC
BARS/CONTROL PANEL (BKP-3601)→ON
Measuring : Oscilloscope
Test Point : TP19
Adj. Point : ⊘RV25, ⊘RV27

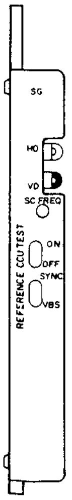
1. Adjust ⊘RV25 so that the white peak level at TP19 is 700±10 mV.



2. WAVEFORM/CONTROL PANEL→G
3. Adjust ⊘RV27 so that the waveform level at TP19 is 700±10 mV.



Note: After this adjustment is completed, be sure set the BARS/CONTROL PANEL to OFF.

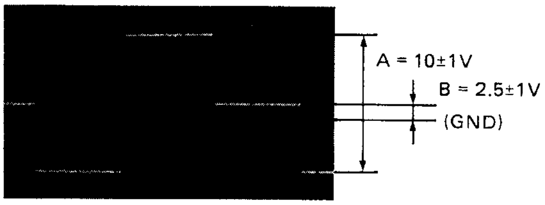


SG-9A board
(Panel side)

5-5-7. Staircase Adjustment

The staircase signal is used for RGB display of the WFM.

Measuring : Oscilloscope
Test Point : TP20
Adj. Point : ⊘RV28, ⊘RV29
Trigger : TP14(VD)/SG-9A board
Spec. : A=10±1V (⊘RV28)
B=2.5±1V (⊘RV29)

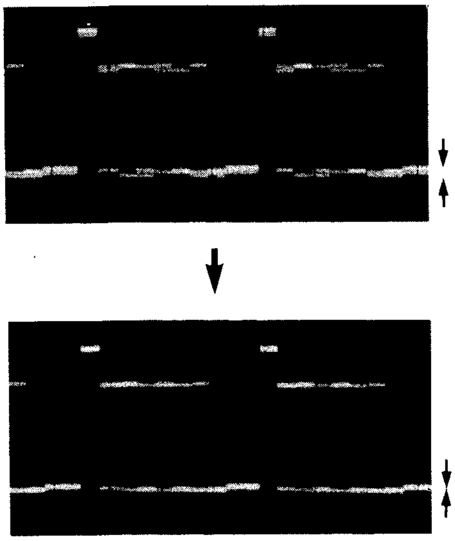


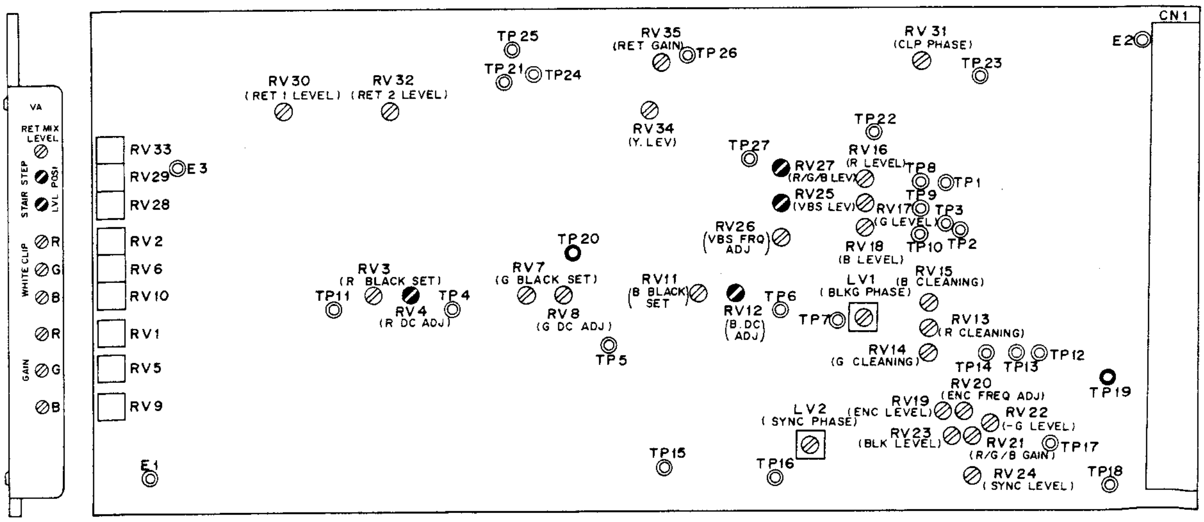
Note: Above specifications are not always satisfied for every waveform monitors.
So it is necessary to readjust ⊘RV28 and ⊘RV29 according to each characteristic of Waveform monitor.

5-5-8. DC Level Adjustment

Measuring : Oscilloscope
Test Point : TP19
Adj. Point : ⊘RV4, ⊘RV12

1. Adjust ⊘RV4 and ⊘RV12 so that the amplitude of black level is minimised.



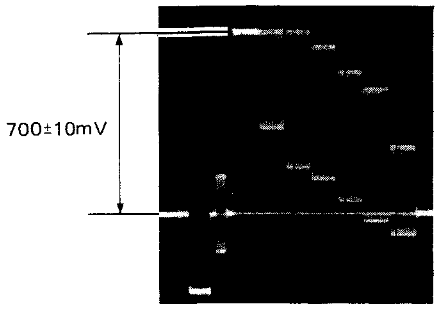

VA
RET MIX LEVEL
STAIR STEP
LVL POSI
WHITE CLIP
GAIN
R
G
B
RV33
RV29
E3
RV28
RV2
RV6
RV10
RV1
RV5
RV9
E1
RV30 (RET 1 LEVEL)
RV32 (RET 2 LEVEL)
TP25
TP21
TP24
RV35 (RET GAIN)
TP26
RV34 (Y. LEV)
RV31 (CLP PHASE)
E2
CN1
TP23
TP22
TP27
RV16 (R LEVEL)
TP8
RV27 (R/G/B LEV)
TP1
RV25 (VBS LEV)
RV17
TP9
TP3
(G LEVEL)
RV26 (VBS FRQ ADJ)
TP20
RV18 (B LEVEL)
TP10
TP2
RV15 (B CLEANING)
LV1 (BLKG PHASE)
RV3 (R BLACK SET)
TP11
TP4
RV4 (R DC ADJ)
RV7 (G BLACK SET)
RV8 (G DC ADJ)
RV11 (B BLACK SET)
TP6
RV12 (B DC ADJ)
TP7
RV13 (R CLEANING)
TP5
RV14 (G CLEANING)
TP14
TP13
TP12
RV20 (ENC FREQ ADJ)
TP19
RV19 (ENC LEVEL)
RV22 (-G LEVEL)
LV2 (SYNC PHASE)
RV23 (BLK LEVEL)
RV21 (R/G/B GAIN)
TP17
TP15
TP16
TP18
RV24 (SYNC LEVEL)

VA-28 board (component side)

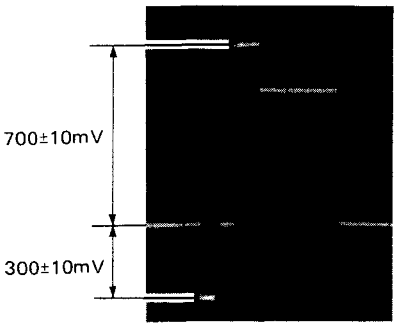
5-5-9. PIX Output Adjustment

Preparation : PICTURE/CONTROL PANEL→ENC
Measuring : Oscilloscope
Test Point : TP18
Adj. Point : ⊘RV19, ⊘RV21, ⊘RV22, ⊘RV23, ⊘RV24

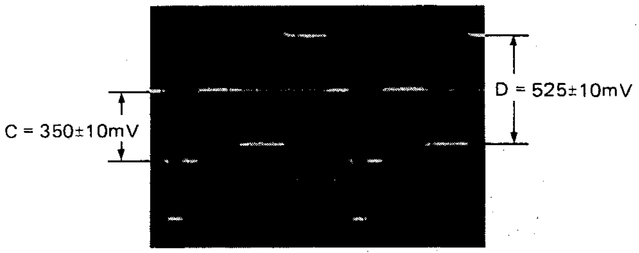
1. Adjust ⊘ RV19 so that the white peak level at TP18 is 700±10 mV.



2. PICTURE/CONTROL PANEL→G
3. Adjust ⊘ RV21 so that the white level is 700±10 mV.
4. Adjust ⊘ RV24 so that the SYNC level is 300±10 mV.

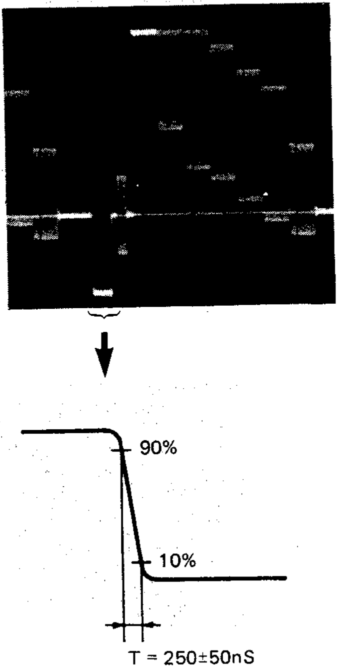


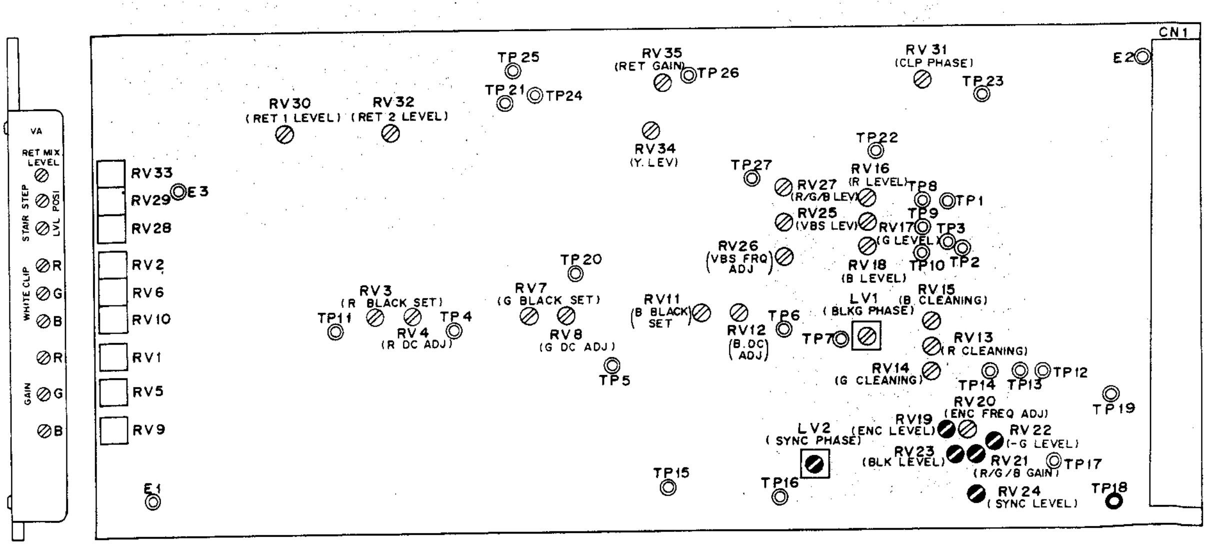
5. PICTURE/CONTROL PANEL→R, -G
6. Adjust ⊘ RV23 so that the level C is 350±10 mV.
7. Adjust ⊘ RV22 so that the level D is 525±10 mV.



5-5-10. PIX SYNC Phase Adjustment

Preparation : PICTURE /CONTROL PANEL
(BKP-3601)→ENC
Measuring : Oscilloscope
Test Point : TP18
Adj. Point : ⊘ LV2
Spec. : T=250±50 nS

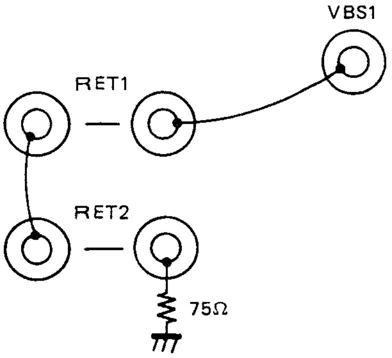

90%
10%
T = 250±50nS


CN1
E2
RV 31
(CLP PHASE)
TP 23
RV35
(RET GAIN)
TP 26
TP 25
TP 21
TP24
RV30
(RET 1 LEVEL)
RV32
(RET 2 LEVEL)
RV34
(Y. LEV)
TP22
TP27
RV16
(R LEVEL)
TP8
TP1
RV27
(R/G/B LEV)
RV25
(VBS LEV)
TP9
RV17
TP3
(G LEVEL)
RV26
(VBS FRQ ADJ)
RV18
(B LEVEL)
TP10
TP2
TP20
RV15
(B CLEANING)
LV1
(BLKG PHASE)
RV3
(R BLACK SET)
RV7
(G BLACK SET)
RV11
(B BLACK SET)
TP11
TP 4
RV4
(R DC ADJ)
RV8
(G DC ADJ)
TP6
RV12
(B.DC ADJ)
TP7
RV13
(R CLEANING)
TP5
RV14
(G CLEANING)
TP14
TP13
TP12
RV20
(ENC FREQ ADJ)
TP19
RV19
(ENC LEVEL)
RV 22
(-G LEVEL)
LV2
(SYNC PHASE)
RV23
(BLK LEVEL)
RV21
(R/G/B GAIN)
TP17
TP15
TP16
RV 24
(SYNC LEVEL)
TP18
E1
RV33
RV29
E 3
RV28
RV2
RV6
RV10
RV1
RV5
RV9
VA
RET MIX LEVEL
STAIR STEP
LVL POSI
WHITE CLIP
R
G
B
GAIN
R
G
B

VA−28 board (component side)

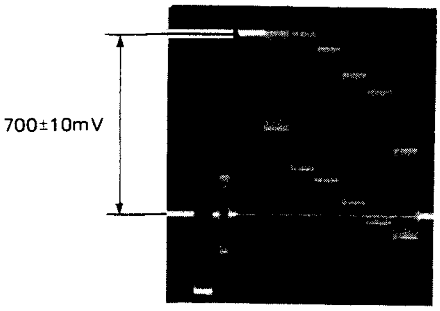
5-5-11. Return Video Adjustment

Preparation : Connect the output terminals on the rear panel as follows.
RET 1/rear panel of BVP-360P→ON

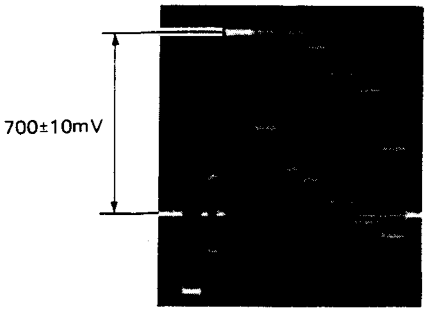


Measuring : Oscilloscope
Test Point : CH1→TP22
CH2→TP23
Adj. Point : ⊘RV30, ⊘RV31, ⊘RV32, ⊘RV33, ⊘RV34, ⊘RV35

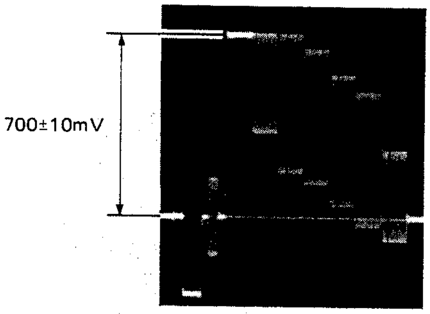
1. Adjust ⊘RV30 so that the white peak level at TP22 is 700±10 mV.



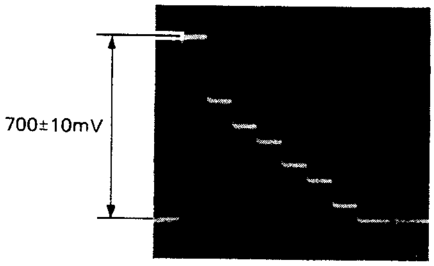
2. RET 1/rear panel of BVP-360P→OFF
RET 2/rear panel of BVP-360P→ON
3. Adjust ⊘RV32 so that the white peak level at TP22 is 700±10 mV.



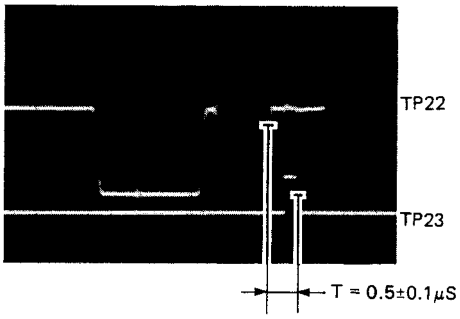
4. MIX VF/blank panel of BVP-360P→ON
⊘RV33→fully counterclockwise ↺
5. Adjust ⊘RV35 so that the white peak level at TP22 is 700±10 mV.

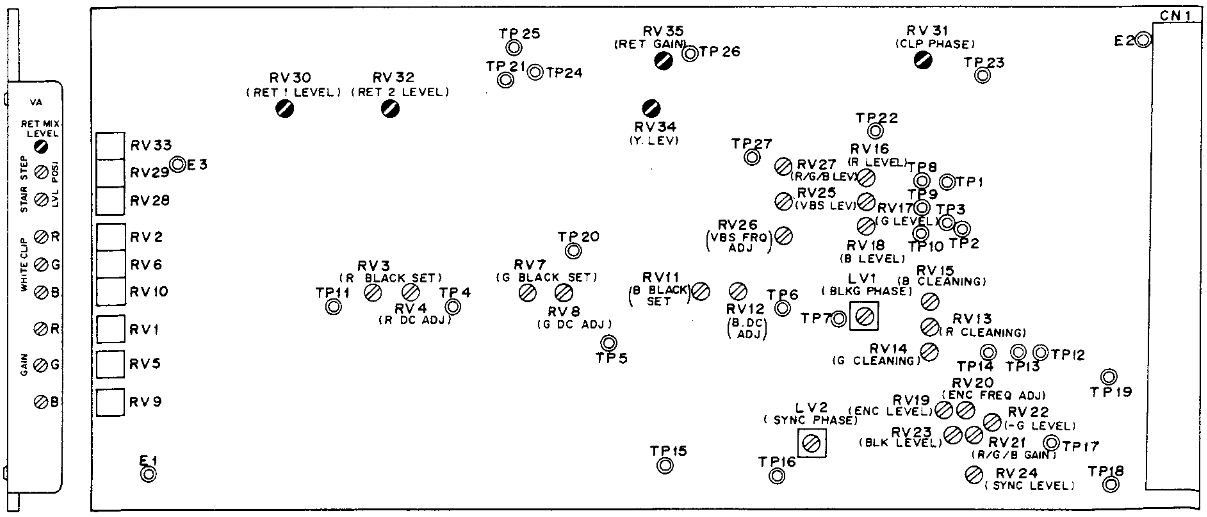


6. ⊘RV33→fully clockwise ↻
7. Adjust ⊘RV34 so that the white peak level at TP22 is 700±10 mV.



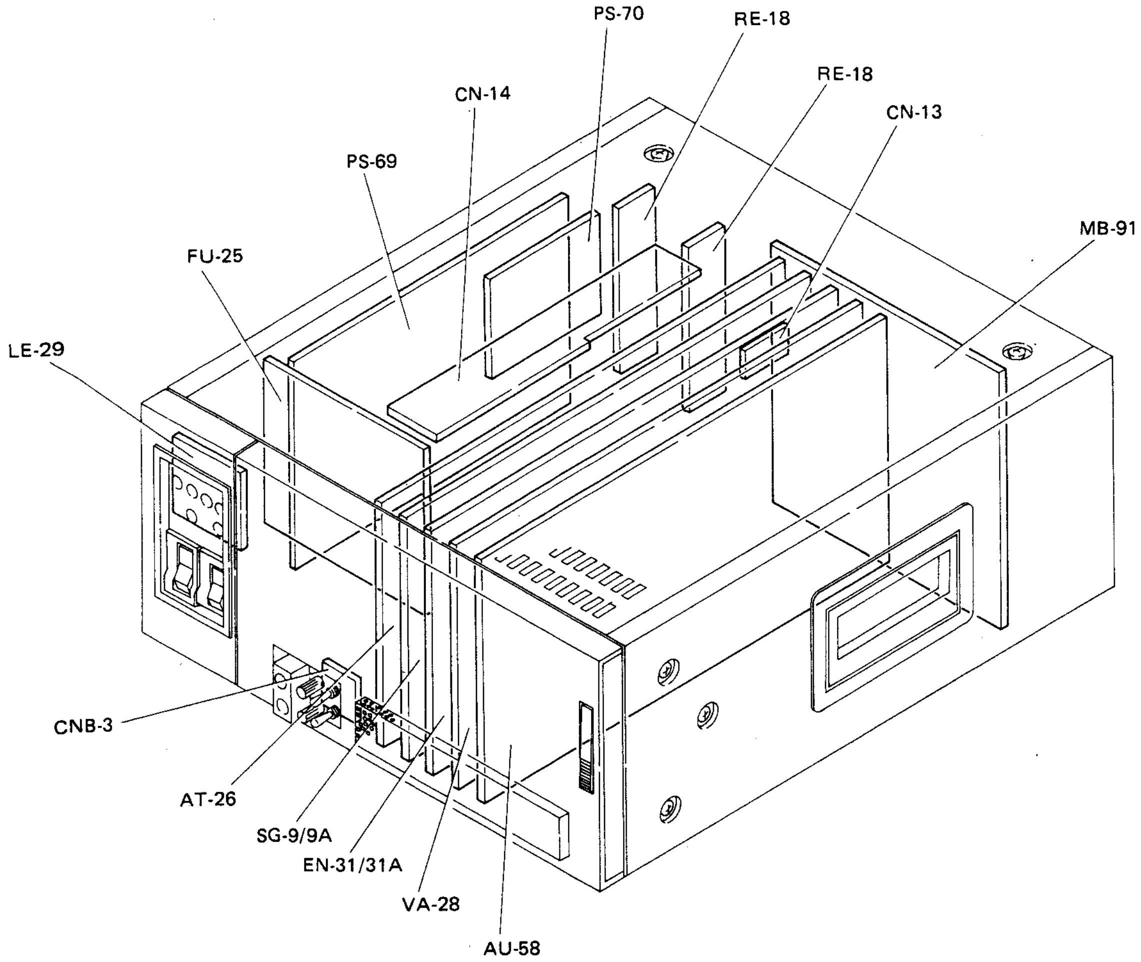
8. ⊘RV33→fully counterclockwise ↺
9. Adjust ⊘RV31 so that T is 0.5±0.1 µS.




VA
RET MIX LEVEL
STAIR STEP
LVL POSI
WHITE CLIP
R
G
B
GAIN
R
G
B
RV33
RV29
E3
RV28
RV2
RV6
RV10
RV1
RV5
RV9
E1
RV30
(RET 1 LEVEL)
RV32
(RET 2 LEVEL)
TP25
TP21
TP24
RV3
(R BLACK SET)
TP11
TP4
RV4
(R DC ADJ)
TP20
RV7
(G BLACK SET)
RV8
(G DC ADJ)
TP5
RV35
(RET GAIN)
TP26
RV34
(Y. LEV)
RV31
(CLP PHASE)
TP23
E2
CN1
TP22
TP27
RV16
(R LEVEL)
TP8
TP1
RV27
(R/G/B LEV)
RV25
(VBS LEV)
TP9
RV17
TP3
(G LEVEL)
RV26
(VBS FRQ ADJ)
RV18
(B LEVEL)
TP10
TP2
RV11
(B BLACK SET)
RV12
(B.DC ADJ)
TP6
LV1
(BLKG PHASE)
TP7
RV15
(B CLEANING)
RV13
(R CLEANING)
RV14
(G CLEANING)
TP14
TP13
TP12
TP19
RV20
(ENC FREQ ADJ)
RV19
(ENC LEVEL)
RV22
(-G LEVEL)
LV2
(SYNC PHASE)
RV23
(BLK LEVEL)
RV21
(R/G/B GAIN)
TP17
TP15
TP16
RV24
(SYNC LEVEL)
TP18

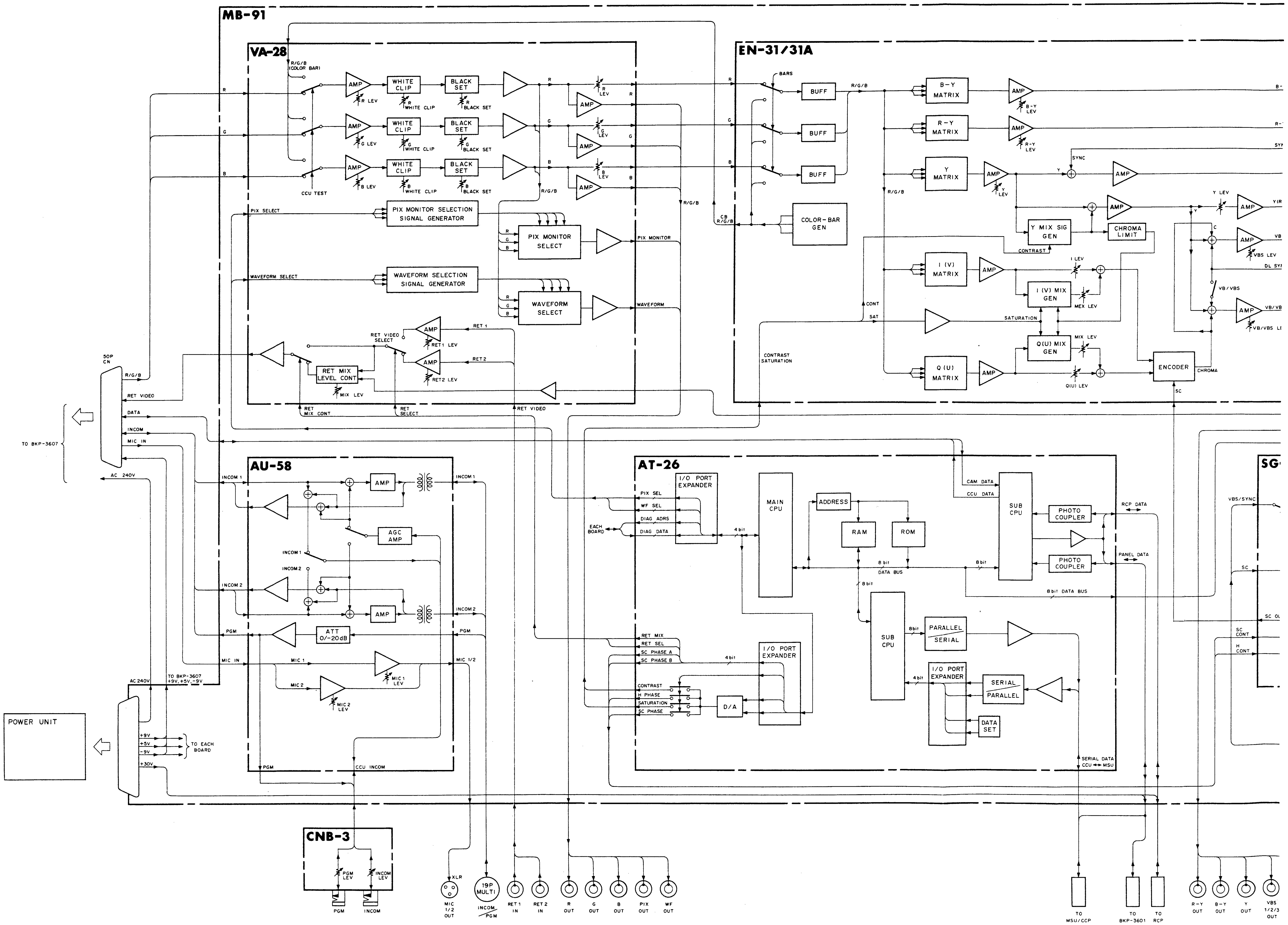
VA−28 board (component side)

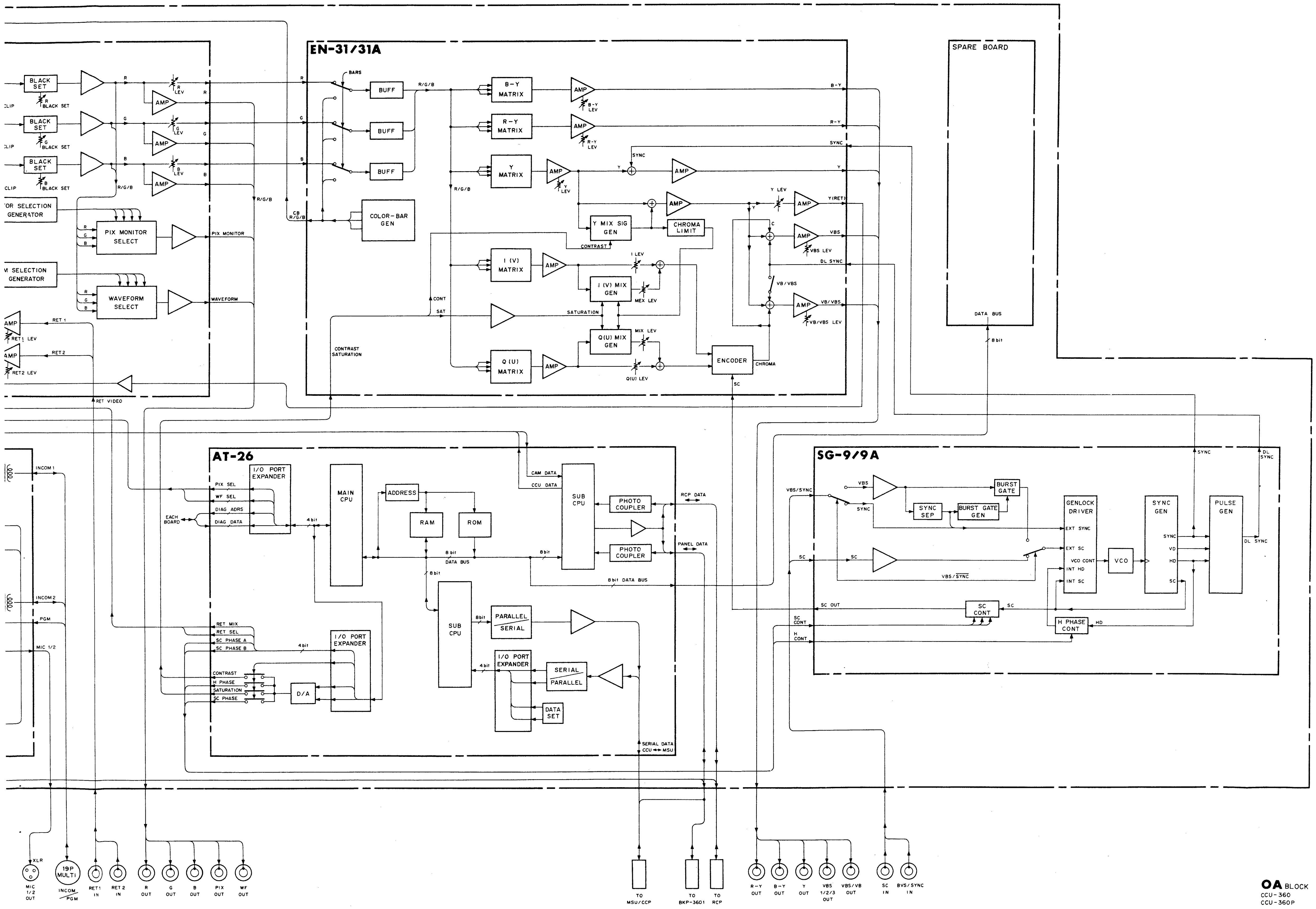
LOCATION OF MOUNTED CIRCUIT BOARD


PS-70
RE-18
RE-18
CN-14
CN-13
PS-69
MB-91
FU-25
LE-29
CNB-3
AT-26
SG-9/9A
EN-31/31A
VA-28
AU-58

SECTION 6
DIAGRAM

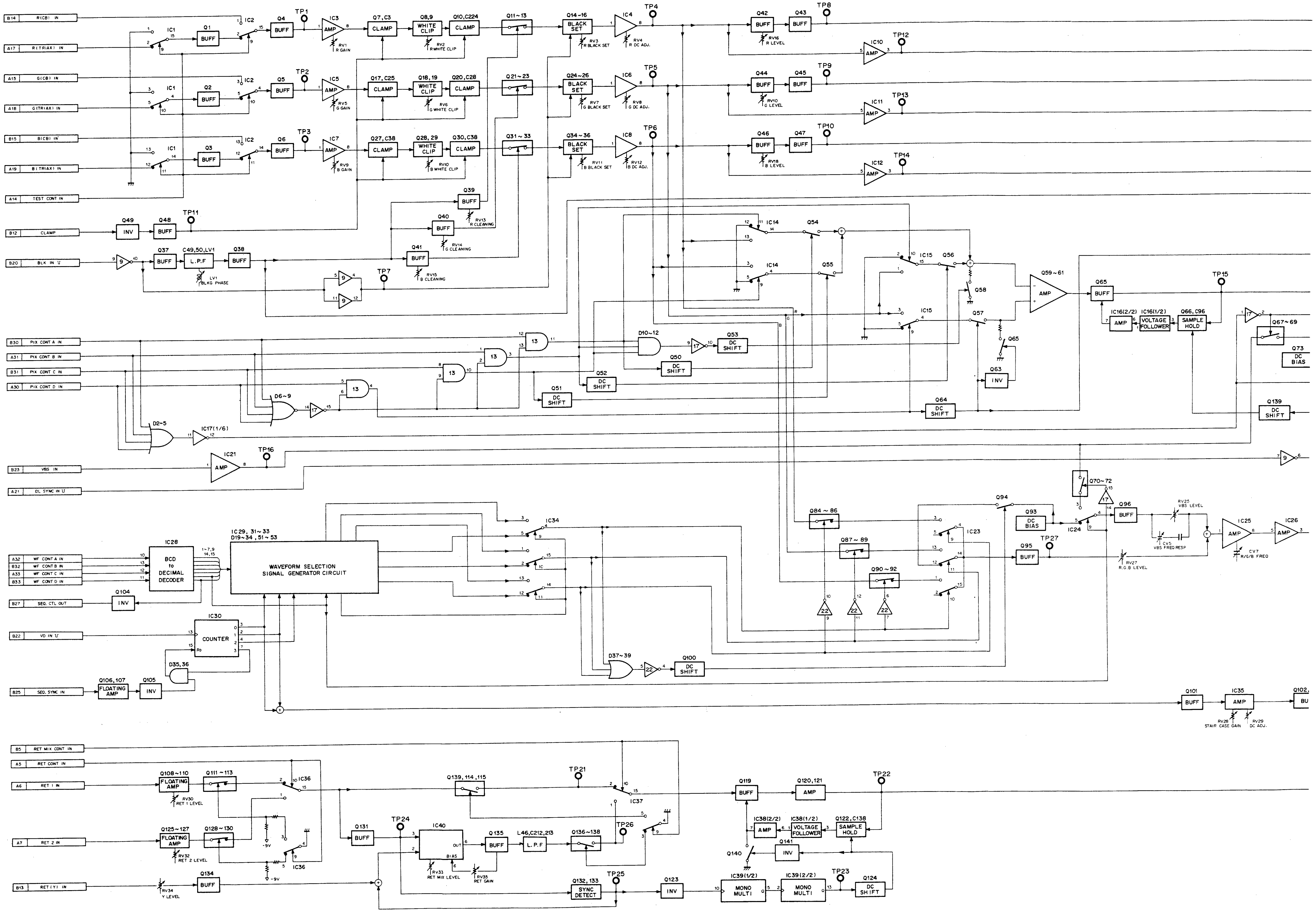
6-1. BLOCK DIAGRAM
OVERALL BLOCK


MB-91
VA-28
R/G/B (COLOR BAR)
AMP
WHITE CLIP
BLACK SET
R LEV
G LEV
B LEV
CCU TEST
PIX SELECT
PIX MONITOR SELECTION SIGNAL GENERATOR
PIX MONITOR SELECT
PIX MONITOR
WAVEFORM SELECT
WAVEFORM SELECTION SIGNAL GENERATOR
WAVEFORM SELECT
WAVEFORM
RET VIDEO SELECT
RET 1
RET 2
RET1 LEV
RET2 LEV
RET MIX LEVEL CONT
MIX LEV
RET MIX CONT
RET SELECT
RET VIDEO
50P CN
R/G/B
DATA
INCOM
MIC IN
AC 240V
TO BKP-3607
EN-31/31A
BARS
BUFF
COLOR-BAR GEN
CB R/G/B
B-Y MATRIX
R-Y MATRIX
Y MATRIX
I (V) MATRIX
Q (U) MATRIX
B-Y LEV
R-Y LEV
Y LEV
SYNC
Y MIX SIG GEN
CHROMA LIMIT
CONTRAST
I LEV
I (V) MIX GEN
MEX LEV
SATURATION
Q(U) MIX GEN
MIX LEV
Q(U) LEV
ENCODER
CHROMA
SC
CONT
SAT
CONTRAST SATURATION
VBS LEV
DL SYNC
VB/VBS
VB/VBS LEV
AU-58
INCOM 1
INCOM 2
AGC AMP
ATT 0/-20dB
PGM
MIC 1
MIC 2
MIC 1 LEV
MIC 2 LEV
MIC 1/2
CCU INCOM
AT-26
I/O PORT EXPANDER
PIX SEL
WF SEL
DIAG ADRS
DIAG DATA
EACH BOARD
MAIN CPU
ADDRESS
RAM
ROM
4 bit
8 bit
8 bit DATA BUS
SUB CPU
CAM DATA
CCU DATA
PHOTO COUPLER
RCP DATA
PANEL DATA
PARALLEL / SERIAL
SERIAL / PARALLEL
DATA SET
RET MIX
RET SEL
SC PHASE A
SC PHASE B
H PHASE
SC PHASE
D/A
SERIAL DATA CCU ↔ MSU
SG
VBS/SYNC
SC OUT
SC CONT
H CONT
POWER UNIT
+9V
+5V
-9V
+30V
TO EACH BOARD
TO BKP-3607 +9V, +5V, -9V
CNB-3
PGM LEV
INCOM LEV
PGM
INCOM
XLR
MIC 1/2 OUT
19P MULTI
INCOM/PGM
RET 1 IN
RET 2 IN
R OUT
G OUT
B OUT
PIX OUT
WF OUT
TO MSU/CCP
TO BKP-3601
TO RCP
R-Y OUT
B-Y OUT
Y OUT
VBS 1/2/3 OUT

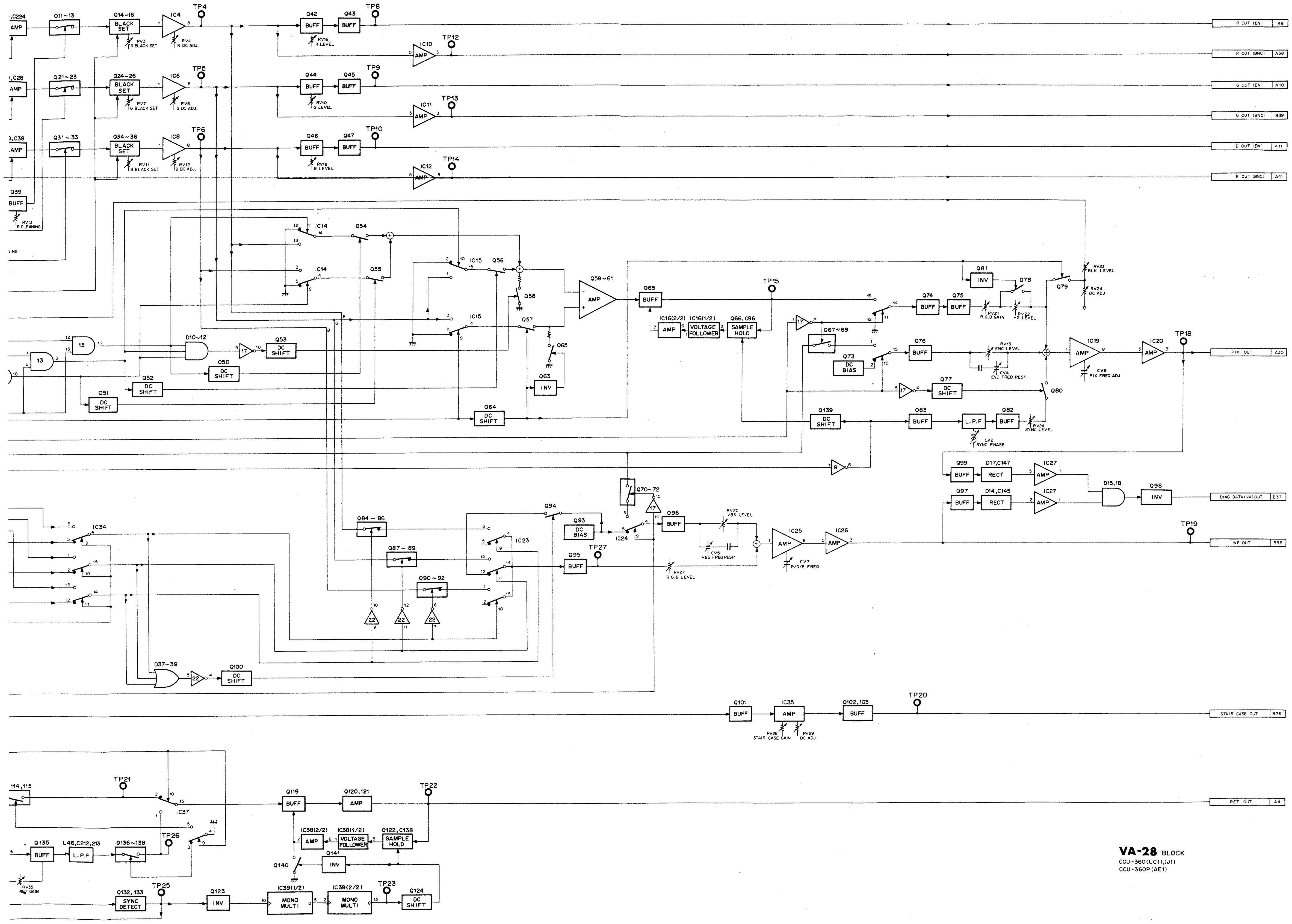

EN-31/31A
BARS
BUFF
R/G/B
B-Y MATRIX
R-Y MATRIX
Y MATRIX
AMP
B-Y LEV
R-Y LEV
Y LEV
SYNC
Y
COLOR-BAR GEN
CB R/G/B
Y MIX SIG GEN
CHROMA LIMIT
CONTRAST
I (V) MATRIX
I LEV
I (V) MIX GEN
MEX LEV
CONT
SAT
SATURATION
Q(U) MIX GEN
MIX LEV
Q (U) MATRIX
Q(U) LEV
ENCODER
CHROMA
SC
CONTRAST SATURATION
Y(RET)
VBS
VBS LEV
DL SYNC
VB/VBS
VB/VBS LEV
B-Y
R-Y
SPARE BOARD
DATA BUS
8 bit
BLACK SET
R BLACK SET
G BLACK SET
B BLACK SET
CLIP
R LEV
G LEV
B LEV
R
G
B
R/G/B
TOR SELECTION GENERATOR
M SELECTION GENERATOR
PIX MONITOR SELECT
PIX MONITOR
WAVEFORM SELECT
WAVEFORM
RET 1
RET1 LEV
RET 2
RET2 LEV
RET VIDEO
AT-26
I/O PORT EXPANDER
PIX SEL
WF SEL
DIAG ADRS
DIAG DATA
EACH BOARD
4 bit
MAIN CPU
ADDRESS
RAM
ROM
8 bit DATA BUS
8 bit
CAM DATA
CCU DATA
SUB CPU
PHOTO COUPLER
RCP DATA
PANEL DATA
8 bit DATA BUS
PARALLEL SERIAL
SERIAL PARALLEL
DATA SET
RET MIX
RET SEL
SC PHASE A
SC PHASE B
CONTRAST
H PHASE
SATURATION
SC PHASE
D/A
SERIAL DATA CCU ↔ MSU
INCOM 1
INCOM 2
PGM
MIC 1/2
SG-9/9A
VBS/SYNC
VBS
SYNC
SYNC SEP
BURST GATE
BURST GATE GEN
GENLOCK DRIVER
EXT SYNC
EXT SC
VCO CONT
INT HD
INT SC
VCO
SYNC GEN
VD
HD
PULSE GEN
DL SYNC
VBS/SYNC
SC OUT
SC CONT
H PHASE CONT
SC CONT
H CONT
XLR
MIC 1/2 OUT
19P MULTI
INCOM/PGM
RET1 IN
RET 2 IN
R OUT
G OUT
B OUT
PIX OUT
WF OUT
TO MSU/CCP
TO BKP-3601
TO RCP
R-Y OUT
B-Y OUT
Y OUT
VBS 1/2/3 OUT
VBS/VB OUT
SC IN
BVS/SYNC IN

OA BLOCK
CCU-360
CCU-360P

VA-28 BLOCK


B14 R(CB) IN
A17 R(TRIAX) IN
A15 G(CB) IN
A18 G(TRIAX) IN
B15 B(CB) IN
A19 B(TRIAX) IN
A14 TEST CONT IN
B12 CLAMP
B20 BLK IN
IC1
IC2
Q1 BUFF
Q2 BUFF
Q3 BUFF
Q4 BUFF
Q5 BUFF
Q6 BUFF
TP1
TP2
TP3
IC3 AMP
IC5 AMP
IC7 AMP
RV1 R GAIN
RV5 G GAIN
RV9 B GAIN
Q7,C3 CLAMP
Q17,C25 CLAMP
Q27,C38 CLAMP
Q8,9 WHITE CLIP
Q18,19 WHITE CLIP
Q28,29 WHITE CLIP
RV2 R WHITE CLIP
RV6 G WHITE CLIP
RV10 B WHITE CLIP
Q10,C224 CLAMP
Q20,C28 CLAMP
Q30,C38 CLAMP
Q11~13
Q21~23
Q31~33
Q14~16 BLACK SET
Q24~26 BLACK SET
Q34~36 BLACK SET
RV3 R BLACK SET
RV7 G BLACK SET
RV11 B BLACK SET
IC4
IC6
IC8
RV4 R DC ADJ.
RV8 G DC ADJ.
RV12 B DC ADJ.
TP4
TP5
TP6
Q42 BUFF
Q43 BUFF
Q44 BUFF
Q45 BUFF
Q46 BUFF
Q47 BUFF
TP8
TP9
TP10
RV16 R LEVEL
RV10 G LEVEL
RV18 B LEVEL
IC10 AMP
IC11 AMP
IC12 AMP
TP12
TP13
TP14
Q39 BUFF
Q40 BUFF
Q41 BUFF
RV13 R CLEANING
RV14 G CLEANING
RV15 B CLEANING
Q49 INV
Q48 BUFF
TP11
Q37 BUFF
C49,50,LV1 L.P.F
LV1 BLKG PHASE
Q38 BUFF
TP7
IC14
Q54
Q55
IC15
Q56
Q58
Q57
Q59~61 AMP
Q65 BUFF
TP15
IC16(2/2) AMP
IC16(1/2) VOLTAGE FOLLOWER
Q66,C96 SAMPLE HOLD
Q67~69
Q73 DC BIAS
Q139 DC SHIFT
Q63 INV
Q65
Q64 DC SHIFT
B30 PIX CONT A IN
A31 PIX CONT B IN
B31 PIX CONT C IN
A30 PIX CONT D IN
D10~12
Q53 DC SHIFT
Q50 DC SHIFT
Q52 DC SHIFT
Q51 DC SHIFT
D6~9
D2~5
IC17(1/6)
B23 VBS IN
A21 CL SYNC IN
IC21 AMP
TP16
Q70~72
Q94
Q93 DC BIAS
IC24
Q96 BUFF
RV25 VBS LEVEL
CV5 VBS FREQ RESP
IC25 AMP
IC26 AMP
CV7 R/G/B FREQ
Q95 BUFF
TP27
RV27 R.G.B LEVEL
Q84~86
Q87~89
Q90~92
IC23
IC34
A32 WF CONT A IN
B32 WF CONT B IN
A33 WF CONT C IN
B33 WF CONT D IN
IC28 BCD TO DECIMAL DECODER
IC29, 31~33 D19~34, 51~53
WAVEFORM SELECTION SIGNAL GENERATOR CIRCUIT
B27 SEQ. CTL OUT
Q104 INV
B22 VD IN
IC30 COUNTER
D35,36
B25 SEQ. SYNC IN
Q106,107 FLOATING AMP
Q105 INV
D37~39
Q100 DC SHIFT
Q101 BUFF
IC35 AMP
RV28 STAIR CASE GAIN
RV29 DC ADJ.
Q102,
BU
B5 RET MIX CONT IN
A5 RET CONT IN
A6 RET 1 IN
A7 RET 2 IN
B13 RET(Y) IN
Q108~110 FLOATING AMP
RV30 RET 1 LEVEL
Q111~113
IC36
Q125~127 FLOATING AMP
RV32 RET 2 LEVEL
Q128~130
-9V
RV34 Y LEVEL
Q134 BUFF
Q131 BUFF
TP24
IC40
OUT
BIAS
RV33 RET MIX LEVEL
RV35 RET GAIN
Q135 BUFF
L46,C212,213 L.P.F
Q136~138
Q139, 114, 115
TP21
IC37
TP26
Q132, 133 SYNC DETECT
TP25
Q123 INV
Q119 BUFF
Q120,121 AMP
TP22
IC38(2/2) AMP
IC38(1/2) VOLTAGE FOLLOWER
Q122,C138 SAMPLE HOLD
Q141 INV
Q140
IC39(1/2) MONO MULTI
IC39(2/2) MONO MULTI
TP23
Q124 DC SHIFT

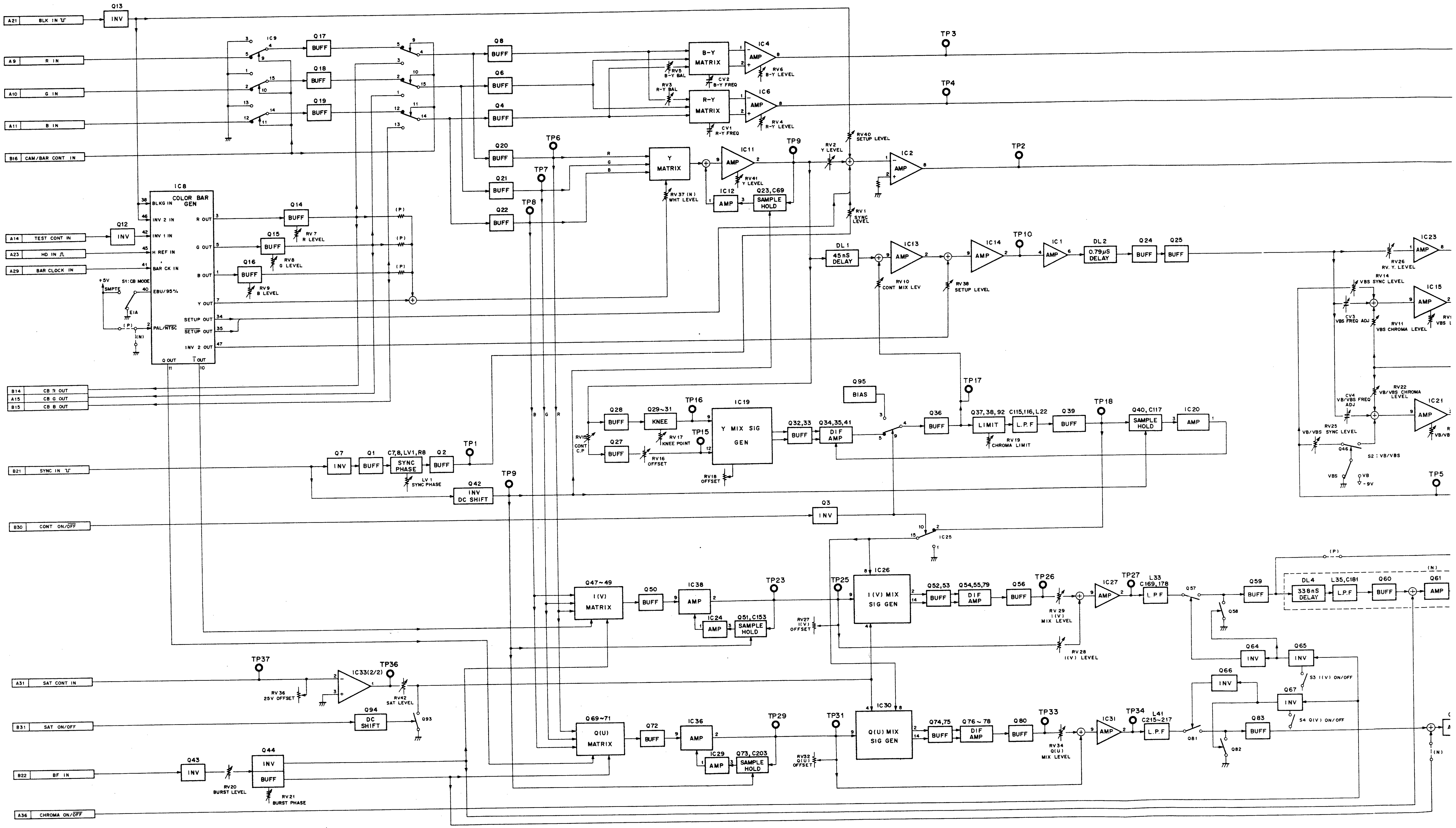
VA-28 BLOCK VA-28 BLOCK

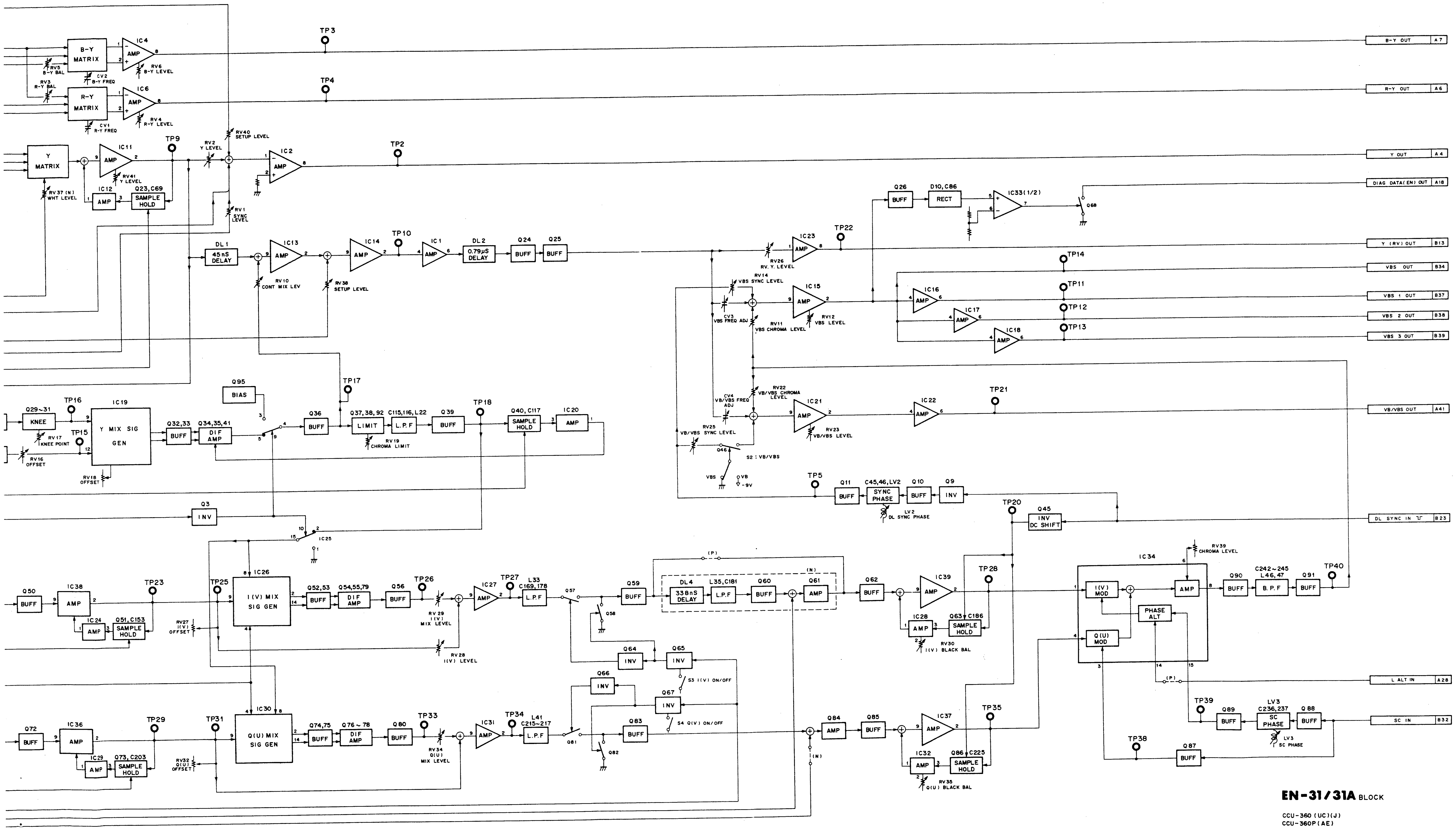


Q11~13
Q14~16
BLACK SET
IC4
TP4
Q42
BUFF
Q43
TP8
RV3 R BLACK SET
RV4 R DC ADJ.
RV16 R LEVEL
IC10
AMP
TP12
Q21~23
Q24~26
IC6
TP5
Q44
Q45
TP9
RV7 G BLACK SET
RV8 G DC ADJ.
RV10 G LEVEL
IC11
TP13
Q31~33
Q34~36
IC8
TP6
Q46
Q47
TP10
RV11 B BLACK SET
RV12 B DC ADJ.
RV18 B LEVEL
IC12
TP14
Q39
RV13 R CLEANING
R OUT (EN) A9
R OUT (BNC) A38
G OUT (EN) A10
G OUT (BNC) B39
B OUT (EN) A11
B OUT (BNC) A41
IC14
Q54
Q55
IC15
Q56
Q58
Q57
Q59~61
Q65
IC16(2/2)
IC16(1/2)
VOLTAGE FOLLOWER
Q66, C96
SAMPLE HOLD
TP15
D10~12
Q53
DC SHIFT
Q50
Q52
Q51
Q63
INV
Q64
Q81
Q78
Q79
RV23 BLK LEVEL
RV24 DC ADJ
Q74
Q75
RV21 R.G.B GAIN
RV22 -G LEVEL
Q67~69
Q73
DC BIAS
Q76
RV19 ENC LEVEL
CV4 ENC FREQ RESP
IC19
CV6 PIX FREQ ADJ
IC20
TP18
PIX OUT A35
Q77
Q80
Q139
Q83
L.P.F
Q82
RV26 SYNC LEVEL
LV2 SYNC PHASE
Q99
D17,C147
RECT
IC27
Q97
D14,C145
D15,18
Q98
DIAG DATA(VA)OUT B37
Q70~72
Q94
Q93
Q96
RV25 VBS LEVEL
CV5 VBS FREQ RESP
IC25
IC26
CV7 R/G/B FREQ
TP19
WF OUT B36
IC24
Q95
TP27
RV27 R.G.B LEVEL
IC34
Q84~86
Q87~89
Q90~92
IC23
D37~39
Q100
Q101
IC35
Q102,103
TP20
RV28 STAIR CASE GAIN
RV29 DC ADJ.
STAIR CASE OUT B26
114,115
TP21
IC37
Q119
Q120,121
TP22
RET OUT A4
IC38(2/2)
IC38(1/2)
Q122,C138
Q141
Q140
TP26
Q135
L46,C212,213
Q136~138
RV35 RET GAIN
Q132,133
SYNC DETECT
TP25
Q123
IC39(1/2)
MONO MULTI
IC39(2/2)
TP23
Q124

VA-28 BLOCK
CCU-360(UC1),(J1)
CCU-360P(AE1)

EN-31/31A BLOCK

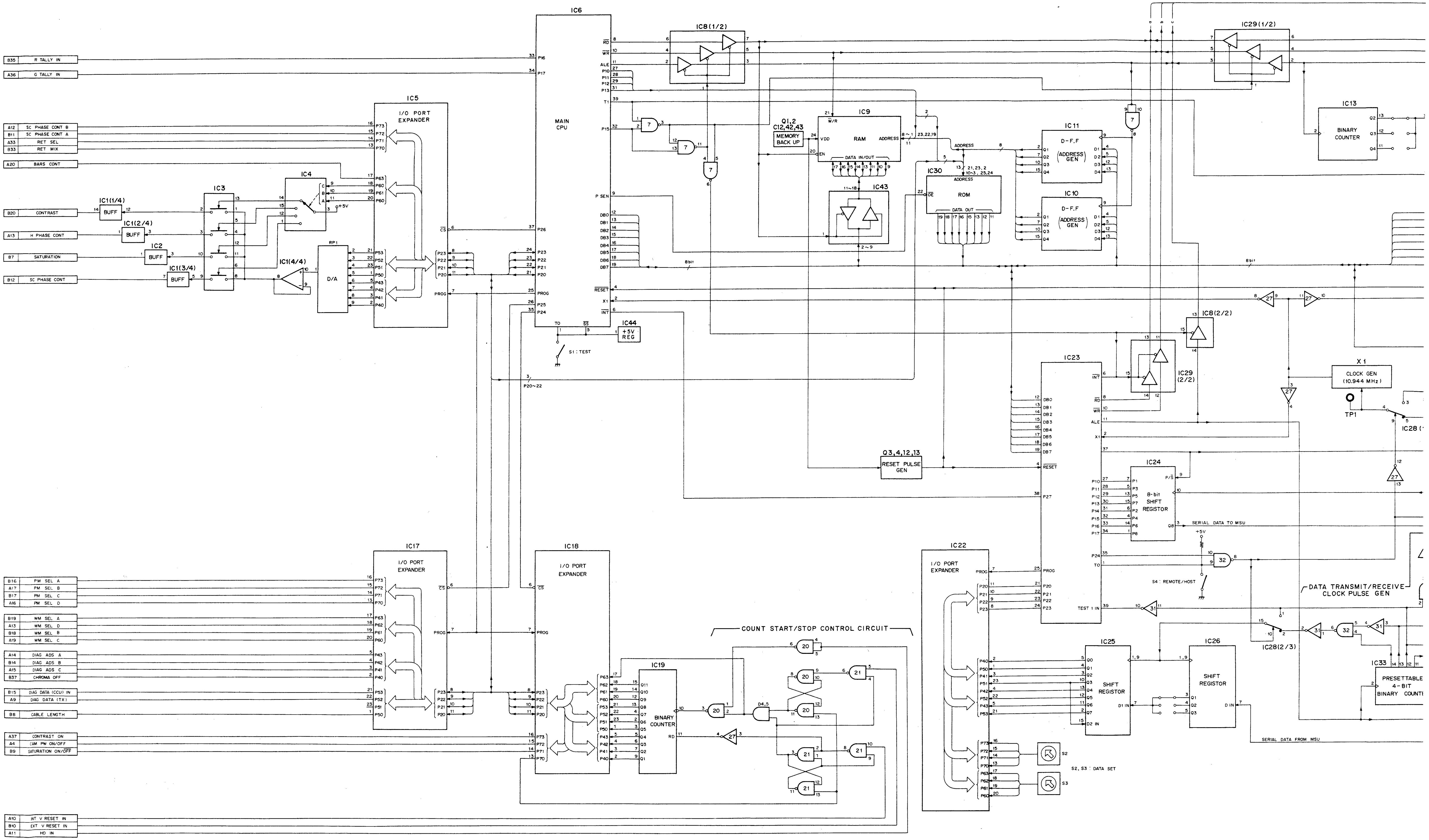

A21 BLK IN
Q13 INV
A9 R IN
A10 G IN
A11 B IN
B16 CAM/BAR CONT IN
IC9
Q17 BUFF
Q18 BUFF
Q19 BUFF
Q8 BUFF
Q6 BUFF
Q4 BUFF
B-Y MATRIX
R-Y MATRIX
RV5 B-Y BAL
RV3 R-Y BAL
CV2 B-Y FREQ
CV1 R-Y FREQ
IC4 AMP
IC6 AMP
RV6 B-Y LEVEL
RV4 R-Y LEVEL
TP3
TP4
Q20 BUFF
Q21 BUFF
Q22 BUFF
TP6
TP7
TP8
R
G
B
Y MATRIX
RV37 (N) WHT LEVEL
IC11 AMP
RV41 Y LEVEL
IC12 AMP
Q23, C69 SAMPLE HOLD
TP9
RV2 Y LEVEL
RV40 SETUP LEVEL
RV1 SYNC LEVEL
IC2 AMP
TP2
IC8
COLOR BAR GEN
BLKG IN
INV 2 IN
INV 1 IN
H REF IN
BAR CK IN
EBU/95%
PAL/NTSC
R OUT
G OUT
B OUT
Y OUT
SETUP OUT
SETUP OUT
INV 2 OUT
Q OUT
I OUT
A14 TEST CONT IN
A23 HD IN
A29 BAR CLOCK IN
Q12 INV
+5V
S1:CB MODE
SMPTE
EIA
(P)
(N)
Q14 BUFF
Q15 BUFF
Q16 BUFF
RV7 R LEVEL
RV8 G LEVEL
RV9 B LEVEL
B14 CB R OUT
A15 CB G OUT
B15 CB B OUT
DL1 45nS DELAY
IC13 AMP
RV10 CONT MIX LEV
IC14 AMP
RV38 SETUP LEVEL
TP10
IC1 AMP
DL2 0.79µS DELAY
Q24 BUFF
Q25 BUFF
IC23 AMP
RV26 RV. Y. LEVEL
RV14 VBS SYNC LEVEL
IC15 AMP
CV3 VBS FREQ ADJ
RV11 VBS CHROMA LEVEL
RV22 VB/VBS CHROMA LEVEL
CV4 VB/VBS FREQ ADJ
IC21 AMP
RV25 VB/VBS SYNC LEVEL
Q46
S2 : VB/VBS
VBS
VB
-9V
TP5
Q95 BIAS
TP17
Q36 BUFF
Q37, 38, 92 LIMIT
RV19 CHROMA LIMIT
C115, 116, L22 L.P.F
Q39 BUFF
TP18
Q40, C117 SAMPLE HOLD
IC20 AMP
Q28 BUFF
Q27 BUFF
RV15 CONT C.P
Q29~31 KNEE
RV17 KNEE POINT
RV16 OFFSET
TP16
TP15
IC19 Y MIX SIG GEN
RV18 OFFSET
Q32,33 BUFF
Q34,35,41 DIF AMP
B21 SYNC IN
Q7 INV
Q1 BUFF
C7,8, LV1, R8 SYNC PHASE
LV1 SYNC PHASE
Q2 BUFF
TP1
Q42 INV DC SHIFT
TP9
B30 CONT ON/OFF
Q3 INV
IC25
Q47~49 I(V) MATRIX
Q50 BUFF
IC38 AMP
IC24 AMP
Q51, C153 SAMPLE HOLD
TP23
TP25
RV27 I(V) OFFSET
IC26 I(V) MIX SIG GEN
Q52,53 BUFF
Q54,55,79 DIF AMP
Q56 BUFF
TP26
RV29 I(V) MIX LEVEL
RV28 I(V) LEVEL
IC27 AMP
TP27
L33 C169, 178 L.P.F
Q57
Q58
Q59 BUFF
(P)
(N)
DL4 338nS DELAY
L35, C181 L.P.F
Q60 BUFF
Q61 AMP
Q64 INV
Q65 INV
S3 I(V) ON/OFF
Q66 INV
Q67 INV
S4 Q(V) ON/OFF
TP37
A31 SAT CONT IN
RV36 25V OFFSET
IC33(2/2)
TP36
RV42 SAT LEVEL
Q93
B31 SAT ON/OFF
Q94 DC SHIFT
B22 BF IN
Q43 INV
RV20 BURST LEVEL
Q44 INV BUFF
RV21 BURST PHASE
A36 CHROMA ON/OFF
Q69~71 Q(U) MATRIX
Q72 BUFF
IC36 AMP
IC29 AMP
Q73, C203 SAMPLE HOLD
TP29
TP31
RV32 Q(U) OFFSET
IC30 Q(U) MIX SIG GEN
Q74,75 BUFF
Q76~78 DIF AMP
Q80 BUFF
TP33
RV34 Q(U) MIX LEVEL
IC31 AMP
TP34
L41 C215~217 L.P.F
Q81
Q82
Q83 BUFF
(N)


B-Y MATRIX
IC4
AMP
RV5 B-Y BAL
CV2 B-Y FREQ
RV6 B-Y LEVEL
TP3
B-Y OUT
A7
RV3 R-Y BAL
R-Y MATRIX
IC6
AMP
CV1 R-Y FREQ
RV4 R-Y LEVEL
TP4
R-Y OUT
A6
Y MATRIX
RV37 (N) WHT LEVEL
IC11
AMP
RV41 Y LEVEL
TP9
RV2 Y LEVEL
RV40 SETUP LEVEL
IC2
AMP
TP2
Y OUT
A4
IC12
AMP
Q23, C69
SAMPLE HOLD
RV1 SYNC LEVEL
DIAG DATA (EN) OUT
A18
Q26
BUFF
D10, C86
RECT
IC33 (1/2)
Q68
DL1
45nS DELAY
IC13
AMP
RV10 CONT MIX LEV
IC14
AMP
RV38 SETUP LEVEL
TP10
IC1
DL2
0.79μS DELAY
Q24
BUFF
Q25
BUFF
RV26 RV. Y. LEVEL
IC23
AMP
TP22
Y (RV) OUT
B13
TP14
VBS OUT
B34
RV14 VBS SYNC LEVEL
CV3 VBS FREQ ADJ
IC15
AMP
RV11 VBS CHROMA LEVEL
RV12 VBS LEVEL
IC16
AMP
TP11
VBS 1 OUT
B37
IC17
AMP
TP12
VBS 2 OUT
B38
IC18
AMP
TP13
VBS 3 OUT
B39
Q95
BIAS
TP17
RV22 VB/VBS CHROMA LEVEL
CV4 VB/VBS FREQ ADJ
IC21
AMP
RV23 VB/VBS LEVEL
IC22
AMP
TP21
VB/VBS OUT
A41
RV25 VB/VBS SYNC LEVEL
Q46
S2 : VB/VBS
VBS
VB
-9V
TP16
Q29~31
KNEE
RV17 KNEE POINT
TP15
RV16 OFFSET
IC19
Y MIX SIG GEN
RV18 OFFSET
Q32, 33
BUFF
Q34, 35, 41
DIF AMP
Q36
BUFF
Q37, 38, 92
LIMIT
RV19 CHROMA LIMIT
C115, 116, L22
L.P.F
Q39
BUFF
TP18
Q40, C117
SAMPLE HOLD
IC20
AMP
TP5
Q11
BUFF
C45, 46, LV2
SYNC PHASE
LV2 DL SYNC PHASE
Q10
BUFF
Q9
INV
Q3
INV
IC25
TP20
Q45
INV DC SHIFT
DL SYNC IN
B23
(P)
(N)
IC34
RV39 CHROMA LEVEL
Q50
BUFF
IC38
AMP
TP23
IC24
AMP
Q51, C153
SAMPLE HOLD
RV27 I(V) OFFSET
TP25
IC26
I (V) MIX SIG GEN
Q52, 53
BUFF
Q54, 55, 79
DIF AMP
Q56
BUFF
TP26
RV29 I(V) MIX LEVEL
IC27
AMP
TP27
L33
C169, 178
L.P.F
Q57
Q58
Q59
BUFF
DL4
338nS DELAY
L35, C181
L.P.F
Q60
BUFF
Q61
AMP
Q62
BUFF
IC39
AMP
TP28
IC28
AMP
Q63, C186
SAMPLE HOLD
RV30 I(V) BLACK BAL
I (V) MOD
AMP
PHASE ALT
Q (U) MOD
Q90
BUFF
C242~245
L46, 47
B. P. F
Q91
BUFF
TP40
RV28 I(V) LEVEL
Q64
INV
Q65
INV
S3 I(V) ON/OFF
Q66
INV
Q67
INV
S4 Q(V) ON/OFF
L ALT IN
A28
TP39
Q89
BUFF
LV3
C236, 237
SC PHASE
LV3 SC PHASE
Q88
BUFF
SC IN
B32
TP38
Q87
BUFF
Q72
BUFF
IC36
AMP
TP29
IC29
AMP
Q73, C203
SAMPLE HOLD
RV32 Q(U) OFFSET
TP31
IC30
Q(U) MIX SIG GEN
Q74, 75
BUFF
Q76~78
DIF AMP
Q80
BUFF
TP33
RV34 Q(U) MIX LEVEL
IC31
AMP
TP34
L41
C215~217
L.P.F
Q81
Q82
Q83
BUFF
Q84
AMP
Q85
BUFF
IC37
AMP
TP35
IC32
AMP
Q86, C225
SAMPLE HOLD
RV35 Q(U) BLACK BAL

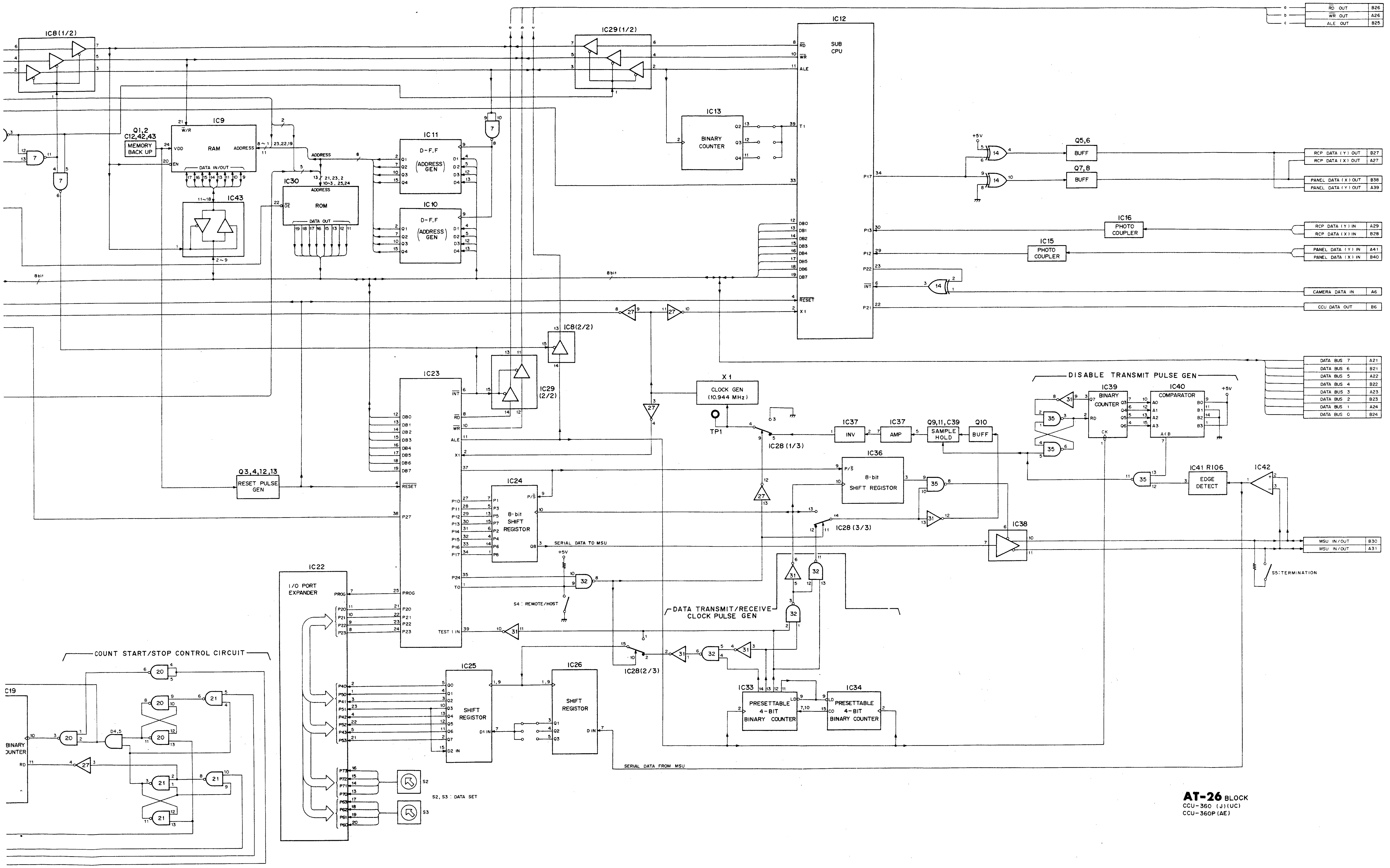
EN-31/31A BLOCK

CCU-360 (UC)(J)
CCU-360P(AE)

AT-26 BLOCK

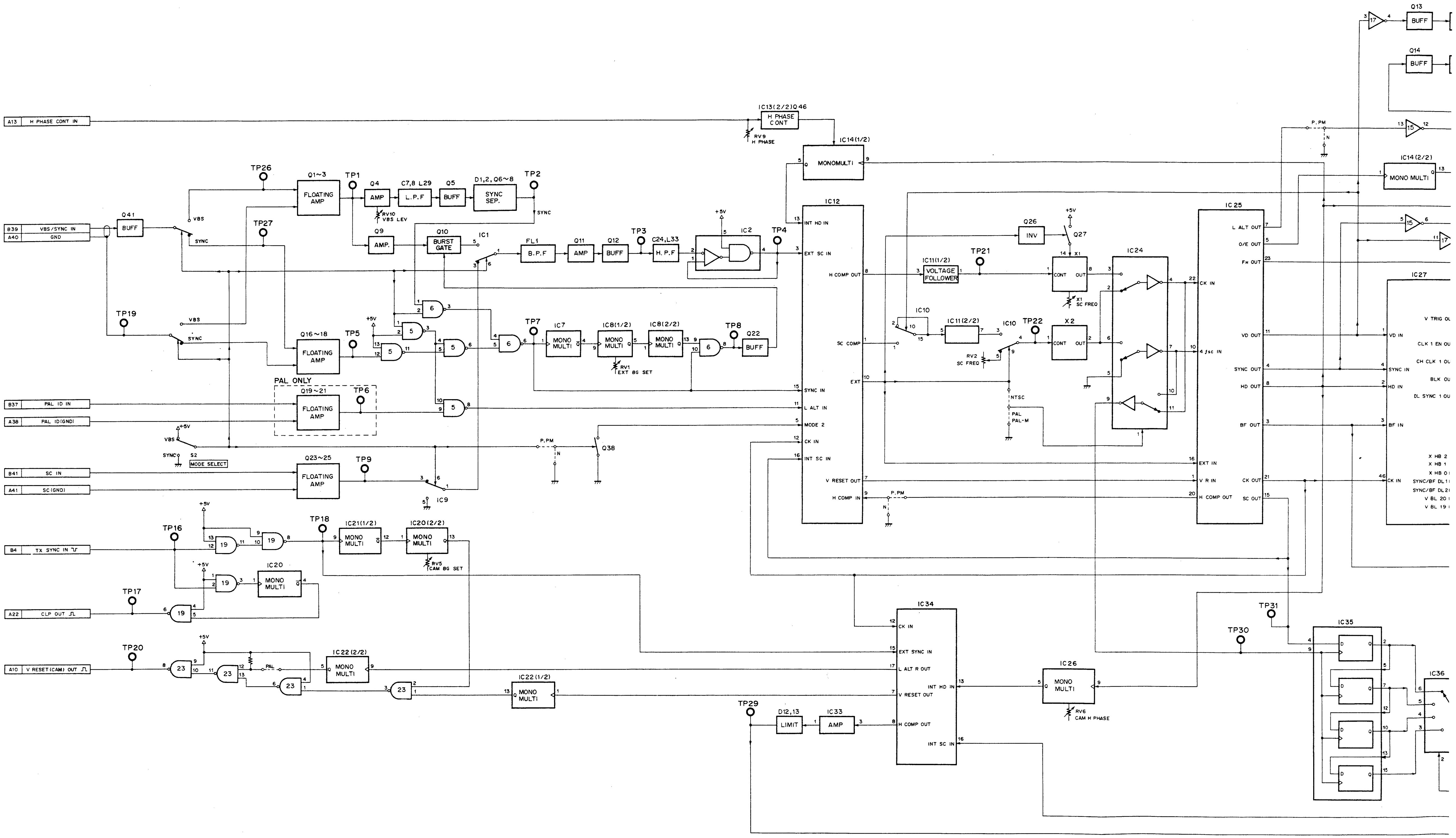

B35 R TALLY IN
A36 G TALLY IN
A12 SC PHASE CONT B
B11 SC PHASE CONT A
A33 RET SEL
B33 RET MIX
A20 BARS CONT
B20 CONTRAST
A13 H PHASE CONT
B7 SATURATION
B12 SC PHASE CONT
IC1(1/4)
IC1(2/4)
IC1(3/4)
IC1(4/4)
BUFF
IC2
IC3
IC4
+5V
RP1
D/A
IC5
I/O PORT EXPANDER
IC6
MAIN CPU
S1 : TEST
IC44
+5V REG
IC8(1/2)
IC8(2/2)
Q1,2 C12,42,43
MEMORY BACK UP
IC9
RAM
ADDRESS
DATA IN/OUT
IC43
IC30
ROM
DATA OUT
IC11
D-F.F
(ADDRESS GEN)
IC10
IC29(1/2)
IC29 (2/2)
IC13
BINARY COUNTER
IC23
8bit
X1
CLOCK GEN (10.944 MHz)
TP1
IC28
Q3,4,12,13
RESET PULSE GEN
IC24
8-bit SHIFT REGISTOR
SERIAL DATA TO MSU
S4 : REMOTE/HOST
DATA TRANSMIT/RECEIVE CLOCK PULSE GEN
IC28(2/3)
IC25
SHIFT REGISTOR
IC26
SHIFT REGISTOR
IC33
PRESETTABLE 4-BIT BINARY COUNT
SERIAL DATA FROM MSU
IC22
I/O PORT EXPANDER
S2, S3 : DATA SET
S2
S3
IC17
I/O PORT EXPANDER
IC18
I/O PORT EXPANDER
IC19
BINARY COUNTER
COUNT START/STOP CONTROL CIRCUIT
D4,5
P20~22
B16 PM SEL A
A17 PM SEL B
B17 PM SEL C
A16 PM SEL D
B19 WM SEL A
A13 WM SEL D
B18 WM SEL B
A19 WM SEL C
A14 DIAG ADS A
B14 DIAG ADS B
A15 DIAG ADS C
B37 CHROMA OFF
B15 DIAG DATA (CCU) IN
A9 DIAG DATA (TX)
B8 CABLE LENGTH
A37 CONTRAST ON
A4 CAM PW ON/OFF
B9 SATURATION ON/OFF
A10 INT V RESET IN
B10 EXT V RESET IN
A11 HD IN

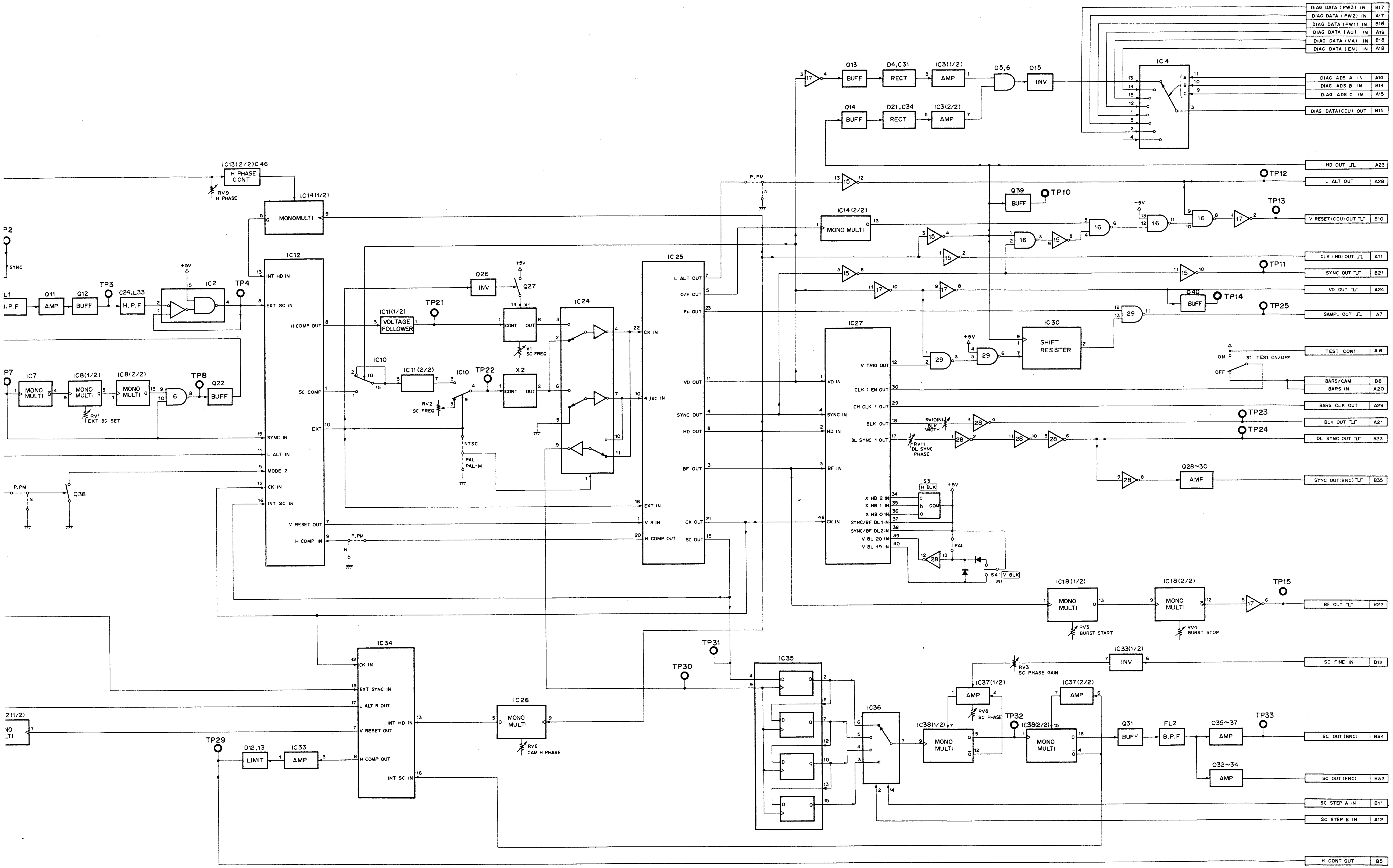
AT-26 BLOCK AT-26 BLOCK


IC8(1/2)
IC29(1/2)
IC12
SUB CPU
RD
WR
ALE
T1
P17
P13
P12
P22
INT
P21
DB0
DB1
DB2
DB3
DB4
DB5
DB6
DB7
RESET
X1
IC13
BINARY COUNTER
Q1,2 C12,42,43
MEMORY BACK UP
IC9
RAM
W/R
VDD
CEN
ADDRESS
DATA IN/OUT
IC43
IC30
ROM
OE
DATA OUT
IC11
D-F.F
(ADDRESS GEN)
IC10
D-F.F
(ADDRESS GEN)
8bit
Q5,6
BUFF
Q7,8
BUFF
+5V
14
IC16
PHOTO COUPLER
IC15
PHOTO COUPLER
RD OUT B26
WR OUT A26
ALE OUT B25
RCP DATA (Y) OUT B27
RCP DATA (X) OUT A27
PANEL DATA (X) OUT B38
PANEL DATA (Y) OUT A39
RCP DATA (Y) IN A29
RCP DATA (X) IN B28
PANEL DATA (Y) IN A41
PANEL DATA (X) IN B40
CAMERA DATA IN A6
CCU DATA OUT B6
DATA BUS 7 A21
DATA BUS 6 B21
DATA BUS 5 A22
DATA BUS 4 B22
DATA BUS 3 A23
DATA BUS 2 B23
DATA BUS 1 A24
DATA BUS 0 B24
IC8(2/2)
IC29 (2/2)
IC23
INT
RD
WR
ALE
X1
RESET
P27
PROG
P20
P21
P22
P23
TEST 1 IN
P24
T0
Q3,4,12,13
RESET PULSE GEN
X1
CLOCK GEN (10.944 MHz)
TP1
IC28(1/3)
IC24
8-bit SHIFT REGISTOR
P/S
SERIAL DATA TO MSU
DISABLE TRANSMIT PULSE GEN
IC39
BINARY COUNTER
IC40
COMPARATOR
A<B
IC37
INV
IC37
AMP
Q9,11,C39
SAMPLE HOLD
Q10
BUFF
IC36
8-bit SHIFT REGISTOR
IC41 R106
EDGE DETECT
IC42
IC28 (3/3)
IC38
MSU IN/OUT B30
MSU IN/OUT A31
S5:TERMINATION
S4: REMOTE/HOST
IC22
I/O PORT EXPANDER
DATA TRANSMIT/RECEIVE CLOCK PULSE GEN
IC28(2/3)
IC33
PRESETTABLE 4-BIT BINARY COUNTER
IC34
PRESETTABLE 4-BIT BINARY COUNTER
IC25
SHIFT REGISTOR
IC26
SHIFT REGISTOR
D1 IN
D IN
SERIAL DATA FROM MSU
S2, S3: DATA SET
COUNT START/STOP CONTROL CIRCUIT
IC19
BINARY COUNTER
D4,5

AT-26 BLOCK
CCU-360 (J)(UC)
CCU-360P (AE)

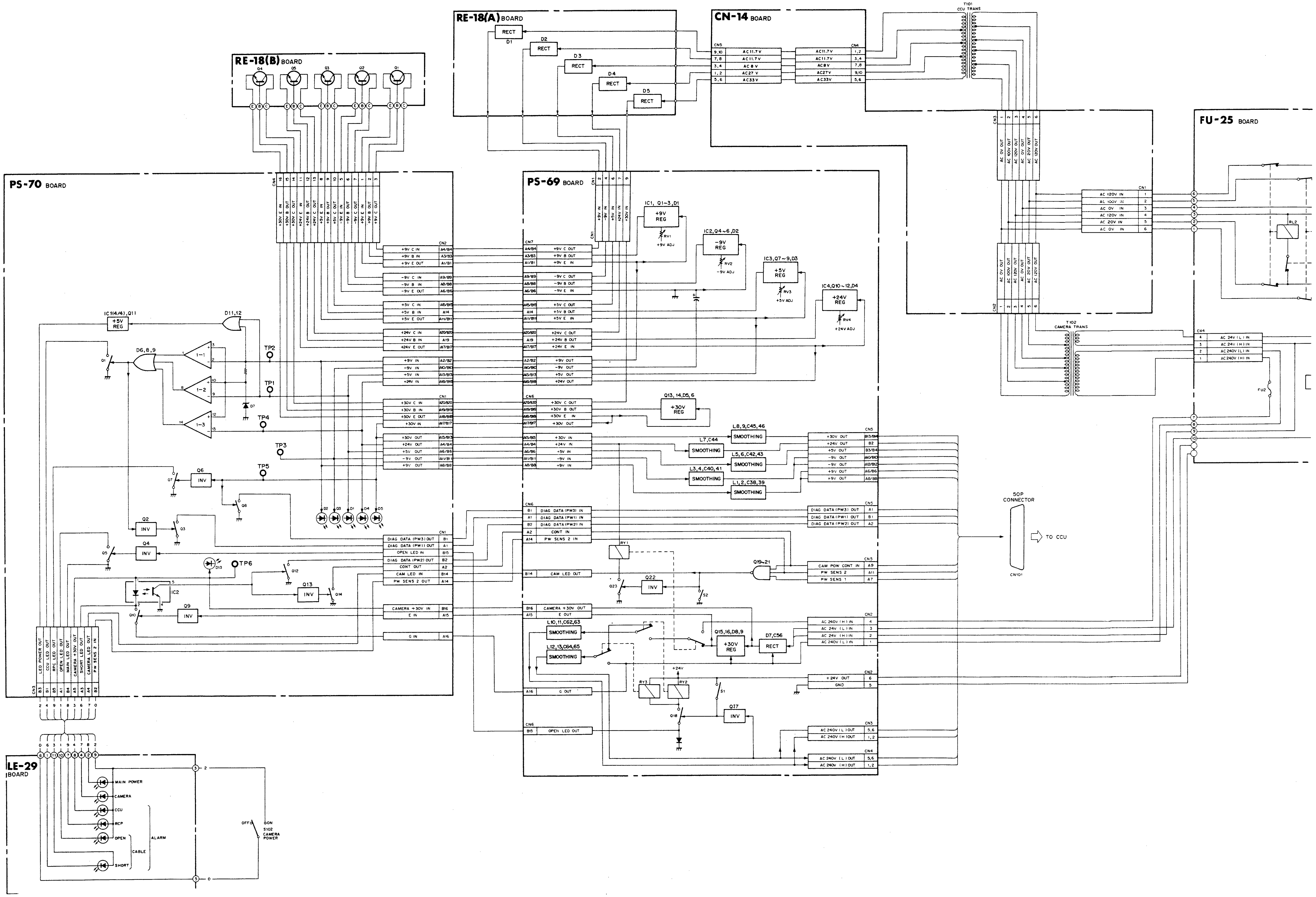
SG-9/9A BLOCK

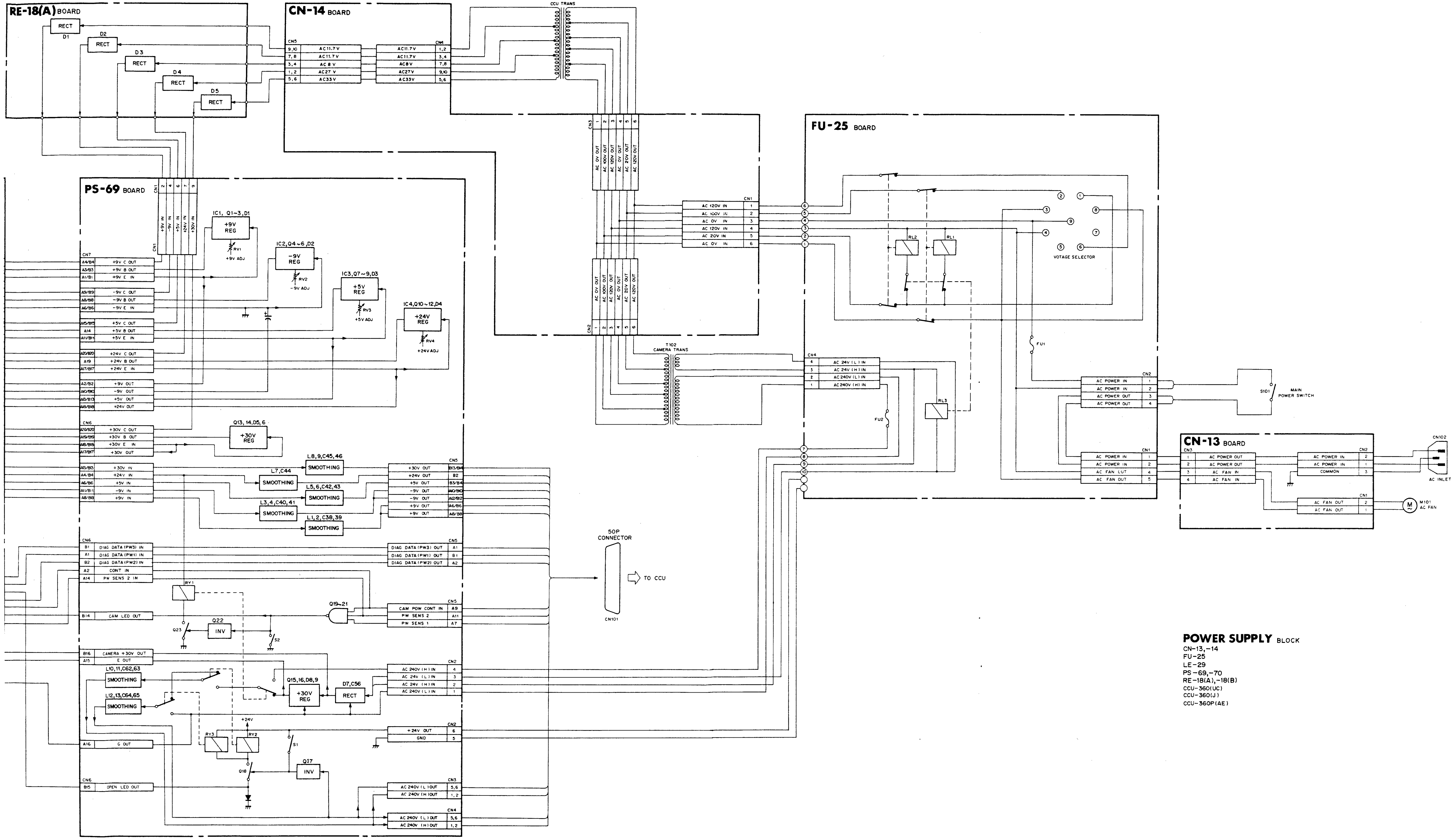

A13 H PHASE CONT IN
B39 VBS/SYNC IN
A40 GND
B37 PAL ID IN
A38 PAL ID(GND)
B41 SC IN
A41 SC(GND)
B4 TX SYNC IN
A22 CLP OUT
A10 V RESET(CAM) OUT
Q41 BUFF
VBS
SYNC
TP26
TP27
TP19
TP1
TP2
TP3
TP4
TP5
TP6
TP7
TP8
TP9
TP16
TP17
TP18
TP20
TP21
TP22
TP29
TP30
TP31
Q1~3 FLOATING AMP
Q4 AMP
RV10 VBS LEV
C7,8 L29 L.P.F
Q5 BUFF
D1,2, Q6~8 SYNC SEP.
Q9 AMP.
Q10 BURST GATE
IC1
FL1 B.P.F
Q11 AMP
Q12 BUFF
C24,L33 H.P.F
IC2
+5V
Q16~18 FLOATING AMP
PAL ONLY
Q19~21 FLOATING AMP
S2 MODE SELECT
Q23~25 FLOATING AMP
IC9
IC7 MONO MULTI
IC8(1/2) MONO MULTI
RV1 EXT BG SET
IC8(2/2) MONO MULTI
Q22 BUFF
P.PM
N
Q38
IC13(2/2)Q46 H PHASE CONT
RV9 H PHASE
IC14(1/2) MONOMULTI
IC12
INT HD IN
EXT SC IN
H COMP OUT
SC COMP
EXT
SYNC IN
L ALT IN
MODE 2
CK IN
INT SC IN
V RESET OUT
H COMP IN
IC21(1/2) MONO MULTI
IC20(2/2) MONO MULTI
RV5 CAM BG SET
IC20 MONO MULTI
IC22(2/2) MONO MULTI
PAL
IC22(1/2) MONO MULTI
Q26 INV
Q27
IC11(1/2) VOLTAGE FOLLOWER
X1
CONT OUT
X1 SC FREQ
IC10
IC11(2/2)
RV2 SC FREQ
X2
NTSC
PAL PAL-M
IC24
IC25
L ALT OUT
O/E OUT
FH OUT
CK IN
4 fsc IN
VD OUT
SYNC OUT
HD OUT
BF OUT
EXT IN
V R IN
CK OUT
H COMP OUT
SC OUT
Q13 BUFF
Q14 BUFF
IC14(2/2) MONO MULTI
IC27
V TRIG OU
VD IN
CLK 1 EN OU
CH CLK 1 OU
SYNC IN
BLK OU
HD IN
DL SYNC 1 OU
BF IN
X HB 2
X HB 1
X HB 0
CK IN
SYNC/BF DL1
SYNC/BF DL2
V BL 20
V BL 19
IC34
CK IN
EXT SYNC IN
L ALT R OUT
V RESET OUT
INT HD IN
H COMP OUT
INT SC IN
D12,13 LIMIT
IC33 AMP
IC26 MONO MULTI
RV6 CAM H PHASE
IC35
D Q
IC36


DIAG DATA (PW3) IN B17
DIAG DATA (PW2) IN A17
DIAG DATA (PW1) IN B16
DIAG DATA (AU) IN A19
DIAG DATA (VA) IN B18
DIAG DATA (EN) IN A18
DIAG ADS A IN A14
DIAG ADS B IN B14
DIAG ADS C IN A15
DIAG DATA (CCU) OUT B15
HD OUT A23
L ALT OUT A28
V RESET (CCU) OUT B10
CLK (HD) OUT A11
SYNC OUT B21
VD OUT A24
SAMPL OUT A7
TEST CONT A8
BARS/CAM B8
BARS IN A20
BARS CLK OUT A29
BLK OUT A21
DL SYNC OUT B23
SYNC OUT (BNC) B35
BF OUT B22
SC FINE IN B12
SC OUT (BNC) B34
SC OUT (ENC) B32
SC STEP A IN B11
SC STEP B IN A12
H CONT OUT B5
IC4
Q13 BUFF
D4,C31 RECT
IC3(1/2) AMP
Q14 BUFF
D21,C34 RECT
IC3(2/2) AMP
D5,6
Q15 INV
IC13(2/2)Q46 H PHASE CONT
RV9 H PHASE
IC14(1/2) MONOMULTI
IC12
INT HD IN
EXT SC IN
H COMP OUT
SC COMP
EXT
SYNC IN
L ALT IN
MODE 2
CK IN
INT SC IN
V RESET OUT
H COMP IN
P.PM
N
Q38
TP2
SYNC
TP3
TP4
L1
B.P.F
Q11 AMP
Q12 BUFF
C24,L33 H.P.F
IC2
+5V
TP7
IC7 MONO MULTI
IC8(1/2) MONO MULTI
IC8(2/2) MONO MULTI
RV1 EXT BG SET
TP8
Q22 BUFF
IC25
L ALT OUT
O/E OUT
FH OUT
VD OUT
SYNC OUT
HD OUT
BF OUT
CK IN
4 fsc IN
EXT IN
V R IN
H COMP OUT
CK OUT
SC OUT
Q26 INV
Q27
IC11(1/2) VOLTAGE FOLLOWER
TP21
X1 SC FREQ
CONT OUT
IC24
IC10
IC11(2/2)
TP22
X2
RV2 SC FREQ
NTSC
PAL
PAL-M
IC14(2/2) MONO MULTI
IC27
V TRIG OUT
VD IN
CLK 1 EN OUT
CH CLK 1 OUT
SYNC IN
BLK OUT
HD IN
DL SYNC 1 OUT
BF IN
X HB 2 IN
X HB 1 IN
X HB 0 IN
SYNC/BF DL1 IN
SYNC/BF DL2 IN
V BL 20 IN
V BL 19 IN
RV10(N) BLK WIDTH
RV11 DL SYNC PHASE
S3 H BLK
COM
S4 (N) V BLK
Q39 BUFF
TP10
TP11
TP12
TP13
TP14
TP23
TP24
TP25
Q40 BUFF
IC30 SHIFT RESISTER
S1 TEST ON/OFF
ON
OFF
Q28~30 AMP
IC18(1/2) MONO MULTI
IC18(2/2) MONO MULTI
RV3 BURST START
RV4 BURST STOP
TP15
IC34
CK IN
EXT SYNC IN
L ALT R OUT
V RESET OUT
H COMP OUT
INT HD IN
INT SC IN
2(1/2)
TP29
D12,13 LIMIT
IC33 AMP
IC26 MONO MULTI
RV6 CAM H PHASE
TP30
TP31
IC35
IC36
IC33(1/2) INV
RV3 SC PHASE GAIN
IC37(1/2) AMP
IC37(2/2) AMP
RV8 SC PHASE
TP32
IC38(1/2) MONO MULTI
IC38(2/2) MONO MULTI
Q31 BUFF
FL2 B.P.F
Q35~37 AMP
Q32~34 AMP
TP33

SG-9/9A BLOCK
CCU-360 (J, UC)
CCU-360P (AE)

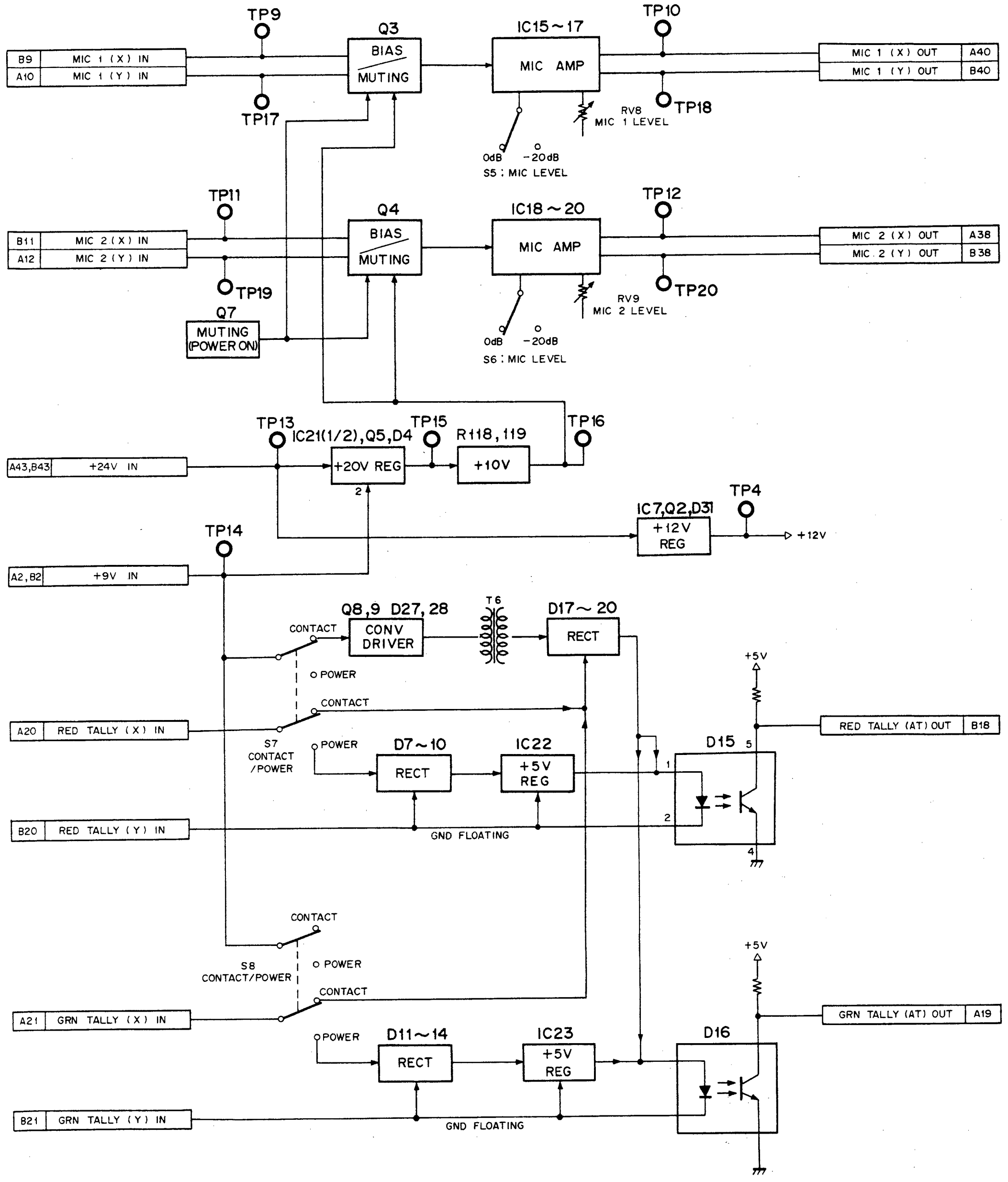
POWER SUPPLY BLOCK

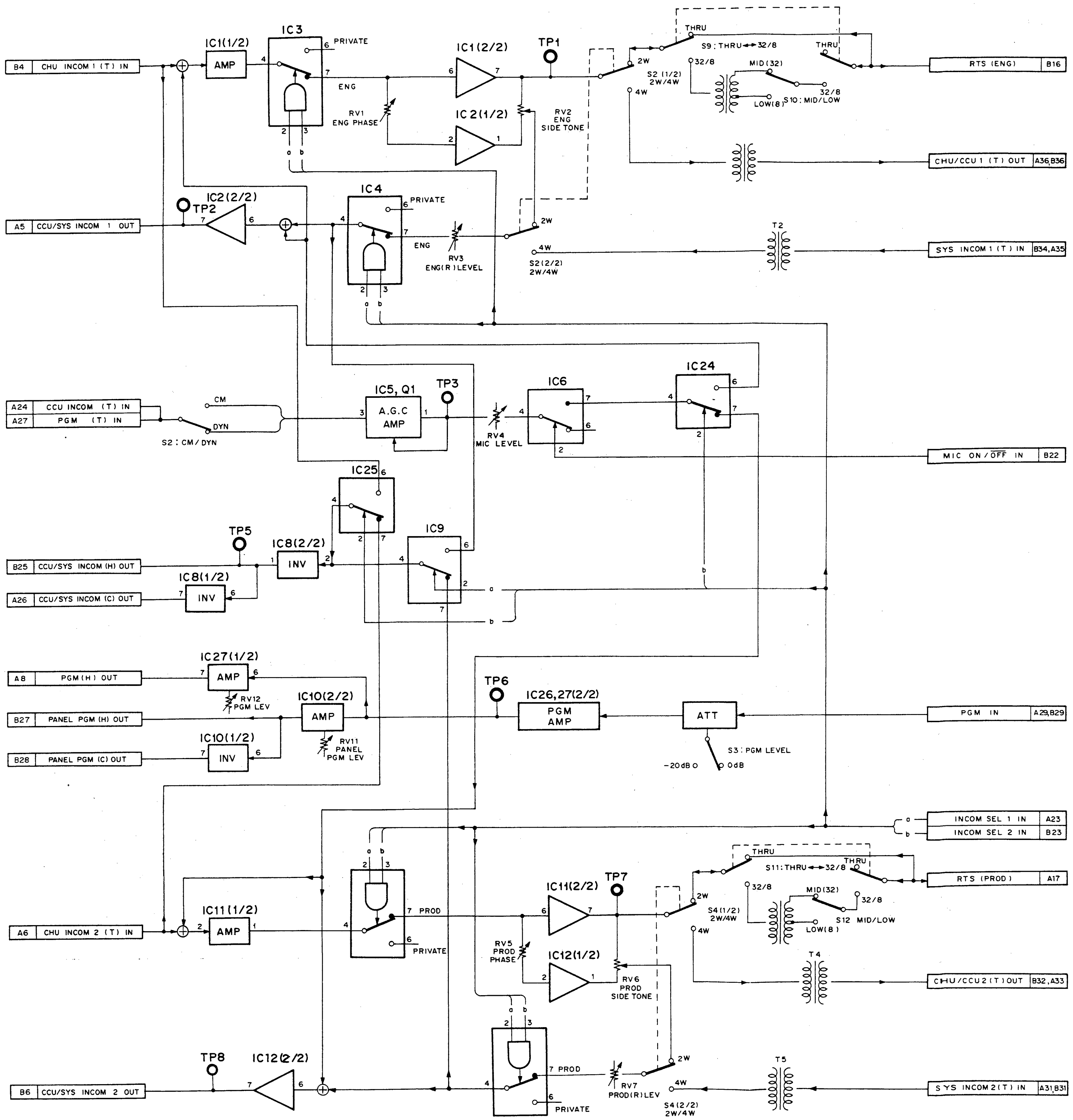

RE-18(A) BOARD
RECT
D1
D2
D3
D4
D5
CN-14 BOARD
T101 CCU TRANS
AC11.7V
AC8V
AC27V
AC33V
RE-18(B) BOARD
Q4
Q5
Q3
Q2
Q1
FU-25 BOARD
PS-70 BOARD
PS-69 BOARD
IC1, Q1~3, D1
+9V REG
RV1 +9V ADJ
IC2, Q4~6, D2
-9V REG
RV2 -9V ADJ
IC3, Q7~9, D3
+5V REG
RV3 +5V ADJ
IC4, Q10~12, D4
+24V REG
RV4 +24V ADJ
AC 120V IN
AC 100V IN
AC 0V IN
AC 20V IN
RL2
T102 CAMERA TRANS
AC 24V (L) IN
AC 24V (H) IN
AC 240V (L) IN
AC 240V (H) IN
FU2
IC1(4/4), Q11
+5V REG
D11, 12
D6, 8, 9
1-1
1-2
1-3
TP1
TP2
TP3
TP4
TP5
TP6
D7
Q6
INV
Q7
Q8
Q2
Q3
Q4
Q5
D13
Q12
Q13
Q14
IC2
Q9
Q10
Q13, 14, D5, 6
+30V REG
L8, 9, C45, 46
SMOOTHING
L7, C44
L5, 6, C42, 43
L3, 4, C40, 41
L1, 2, C38, 39
DIAG DATA (PW3) OUT
DIAG DATA (PW1) OUT
DIAG DATA (PW2) OUT
OPEN LED IN
CONT OUT
CAM LED IN
PW SENS 2 OUT
CAMERA +30V IN
E IN
G IN
50P CONNECTOR
TO CCU
CN101
RY1
Q19~21
Q22
Q23
S2
CAM POW CONT IN
PW SENS 2
PW SENS 1
L10, 11, C62, 63
L12, 13, C64, 65
Q15, 16, D8, 9
+30V REG
D7, C56
RECT
+24V
RY2
RY3
S1
Q17
Q18
+24V OUT
GND
OPEN LED OUT
AC 240V (L) OUT
AC 240V (H) OUT
LED POWER OUT
CCU LED OUT
RPC LED OUT
OPEN LED OUT
MAIN LED OUT
CAMERA +30V OUT
SHORT LED OUT
CAMERA LED OUT
PW SENS 2 IN
LE-29 BOARD
MAIN POWER
CAMERA
CCU
RCP
OPEN
SHORT
CABLE
ALARM
OFF
ON
S102 CAMERA POWER


RE-18(A) BOARD
RECT
D1
D2
D3
D4
D5
CN-14 BOARD
CN5
CN4
AC11.7V
AC 8 V
AC27 V
AC33V
T101
CCU TRANS
CN3
CN2
CN1
AC 0V OUT
AC 100V OUT
AC 120V OUT
AC 20V OUT
AC 120V IN
AC 100V IN
AC 0V IN
AC 20V IN
T102
CAMERA TRANS
FU-25 BOARD
RL1
RL2
RL3
VOTAGE SELECTOR
FU1
FU2
CN4
AC 24V (L) IN
AC 24V (H) IN
AC240V (L) IN
AC240V (H) IN
AC POWER IN
AC POWER OUT
AC FAN OUT
S101
MAIN POWER SWITCH
CN-13 BOARD
AC FAN IN
COMMON
CN102
AC INLET
M101
AC FAN
PS-69 BOARD
CN7
+9V C OUT
+9V B OUT
+9V E IN
-9V C OUT
-9V B OUT
-9V E IN
+5V C OUT
+5V B OUT
+5V E IN
+24V C OUT
+24V B OUT
+24V E IN
+9V OUT
-9V OUT
+5V OUT
+24V OUT
+9V IN
-9V IN
+5V IN
+24V IN
+30V IN
IC1, Q1~3, D1
+9V REG
RV1
+9V ADJ
IC2, Q4~6, D2
-9V REG
RV2
-9V ADJ
IC3, Q7~9, D3
+5V REG
RV3
+5V ADJ
IC4, Q10~12, D4
+24V REG
RV4
+24V ADJ
CN6
+30V C OUT
+30V B OUT
+30V E IN
+30V OUT
Q13, 14, D5, 6
+30V REG
L8, 9, C45, 46
L7, C44
L5, 6, C42, 43
L3, 4, C40, 41
L1, 2, C38, 39
SMOOTHING
DIAG DATA (PW3) IN
DIAG DATA (PW1) IN
DIAG DATA (PW2) IN
CONT IN
PW SENS 2 IN
DIAG DATA (PW3) OUT
DIAG DATA (PW1) OUT
DIAG DATA (PW2) OUT
RY1
Q19~21
CAM POW CONT IN
PW SENS 2
PW SENS 1
CAM LED OUT
Q22
INV
Q23
S2
CAMERA +30V OUT
E OUT
L10, 11, C62, 63
L12, 13, C64, 65
Q15, 16, D8, 9
D7, C56
RECT
AC 240V (H) IN
AC 24V (L) IN
AC 24V (H) IN
AC 240V (L) IN
+24V
RY3
RY2
S1
Q17
Q18
G OUT
+24V OUT
GND
OPEN LED OUT
AC 240V (L) OUT
AC 240V (H) OUT
50P CONNECTOR
TO CCU
CN101

POWER SUPPLY BLOCK
CN-13, -14
FU-25
LE-29
PS-69, -70
RE-18(A), -18(B)
CCU-360(UC)
CCU-360(J)
CCU-360P(AE)

AU-58 BLOCK


B9 MIC 1 (X) IN
A10 MIC 1 (Y) IN
TP9
TP17
Q3
BIAS
MUTING
IC15~17
MIC AMP
TP10
TP18
RV8 MIC 1 LEVEL
0dB -20dB
S5 : MIC LEVEL
MIC 1 (X) OUT A40
MIC 1 (Y) OUT B40
B11 MIC 2 (X) IN
A12 MIC 2 (Y) IN
TP11
TP19
Q4
BIAS
MUTING
Q7
MUTING (POWER ON)
IC18~20
MIC AMP
TP12
TP20
RV9 MIC 2 LEVEL
0dB -20dB
S6 : MIC LEVEL
MIC 2 (X) OUT A38
MIC 2 (Y) OUT B38
A43,B43 +24V IN
TP13
IC21(1/2),Q5,D4
+20V REG
TP15
R118,119
+10V
TP16
IC7,Q2,D31
+12V REG
TP4
+12V
TP14
A2,B2 +9V IN
Q8,9 D27,28
CONTACT
CONV DRIVER
T6
D17~20
RECT
POWER
CONTACT
A20 RED TALLY (X) IN
S7 CONTACT /POWER
POWER
D7~10
RECT
IC22
+5V REG
+5V
D15
RED TALLY (AT) OUT B18
B20 RED TALLY (Y) IN
GND FLOATING
CONTACT
S8 CONTACT/POWER
POWER
CONTACT
A21 GRN TALLY (X) IN
POWER
D11~14
RECT
IC23
+5V REG
+5V
D16
GRN TALLY (AT) OUT A19
B21 GRN TALLY (Y) IN
GND FLOATING

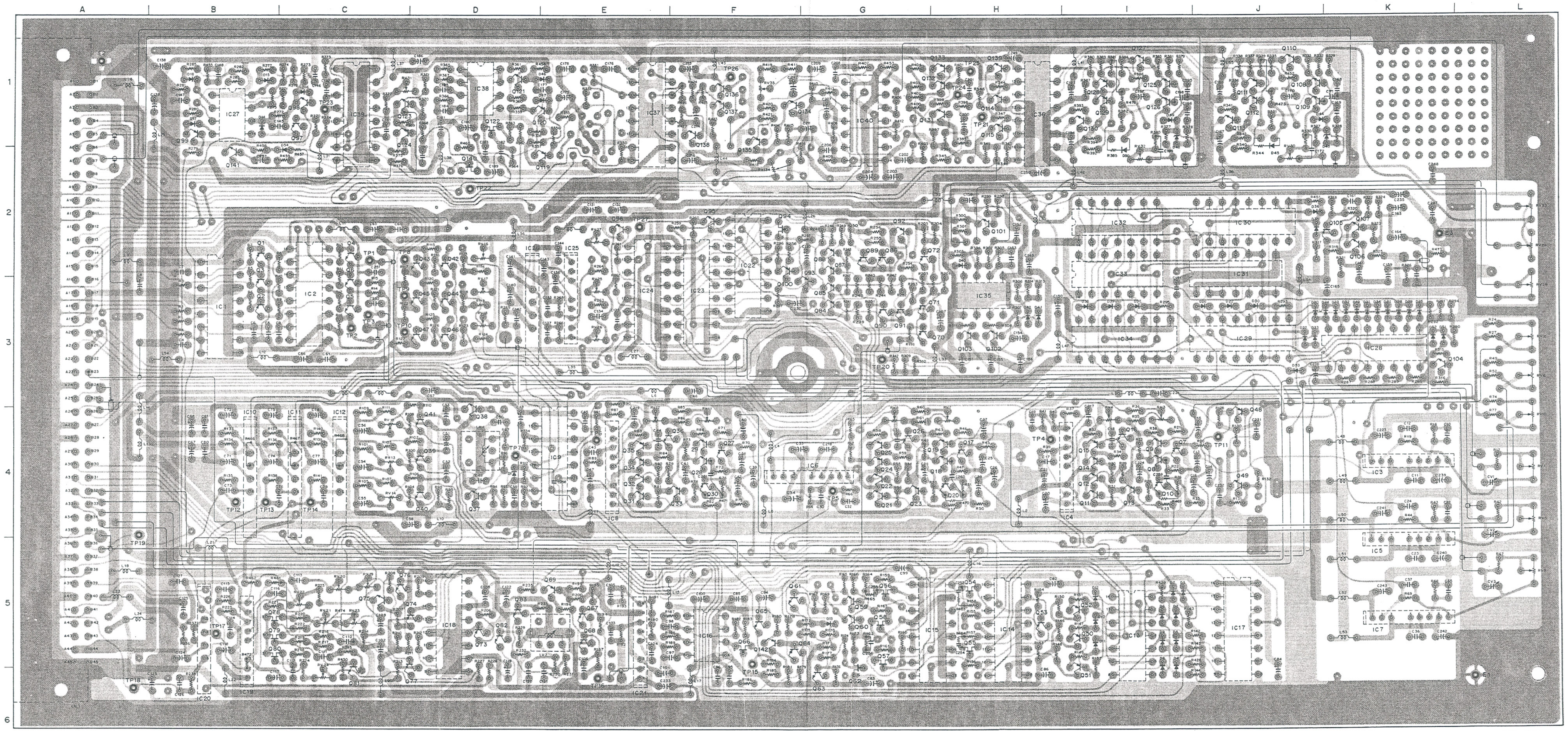

B4 CHU INCOM 1 (T) IN
IC1(1/2)
AMP
IC3
PRIVATE
ENG
IC1(2/2)
TP1
RV1 ENG PHASE
IC2(1/2)
RV2 ENG SIDE TONE
S9 : THRU↔32/8
THRU
2W
32/8
S2 (1/2) 2W/4W
4W
MID(32)
LOW(8)
S10 : MID/LOW
RTS (ENG) B16
CHU/CCU 1 (T) OUT A36,B36
A5 CCU/SYS INCOM 1 OUT
IC2(2/2)
TP2
IC4
PRIVATE
ENG
RV3 ENG(R)LEVEL
S2(2/2) 2W/4W
T2
SYS INCOM 1 (T) IN B34,A35
A24 CCU INCOM (T) IN
A27 PGM (T) IN
CM
DYN
S2 : CM/DYN
IC5, Q1
A.G.C AMP
TP3
RV4 MIC LEVEL
IC6
IC24
MIC ON/OFF IN B22
IC25
TP5
IC8(2/2)
INV
IC9
B25 CCU/SYS INCOM (H) OUT
IC8(1/2)
INV
A26 CCU/SYS INCOM (C) OUT
IC27(1/2)
AMP
A8 PGM (H) OUT
RV12 PGM LEV
IC10(2/2)
AMP
B27 PANEL PGM (H) OUT
IC10(1/2)
INV
RV11 PANEL PGM LEV
B28 PANEL PGM (C) OUT
TP6
IC26,27(2/2)
PGM AMP
ATT
S3 : PGM LEVEL
-20dB 0dB
PGM IN A29,B29
INCOM SEL 1 IN A23
INCOM SEL 2 IN B23
THRU
S11 : THRU↔32/8
RTS (PROD) A17
IC11(2/2)
TP7
PROD
PRIVATE
2W
S4(1/2) 2W/4W
4W
32/8
MID(32)
LOW(8)
S12 MID/LOW
A6 CHU INCOM 2 (T) IN
IC11(1/2)
AMP
RV5 PROD PHASE
IC12(1/2)
RV6 PROD SIDE TONE
T4
CHU/CCU 2 (T) OUT B32,A33
TP8
IC12(2/2)
B6 CCU/SYS INCOM 2 OUT
PROD
PRIVATE
RV7 PROD(R)LEV
S4(2/2) 2W/4W
T5
SYS INCOM 2 (T) IN A31,B31

AU-58 BLOCK
CCU-360(J,UC)
CCU-360P(AE)

6-2. MOUNTING AND SCHEMATIC DIAGRAMS

VA-28 BOARD
– SOLDERING SIDE –

Parts No. 1-615-203-**11**

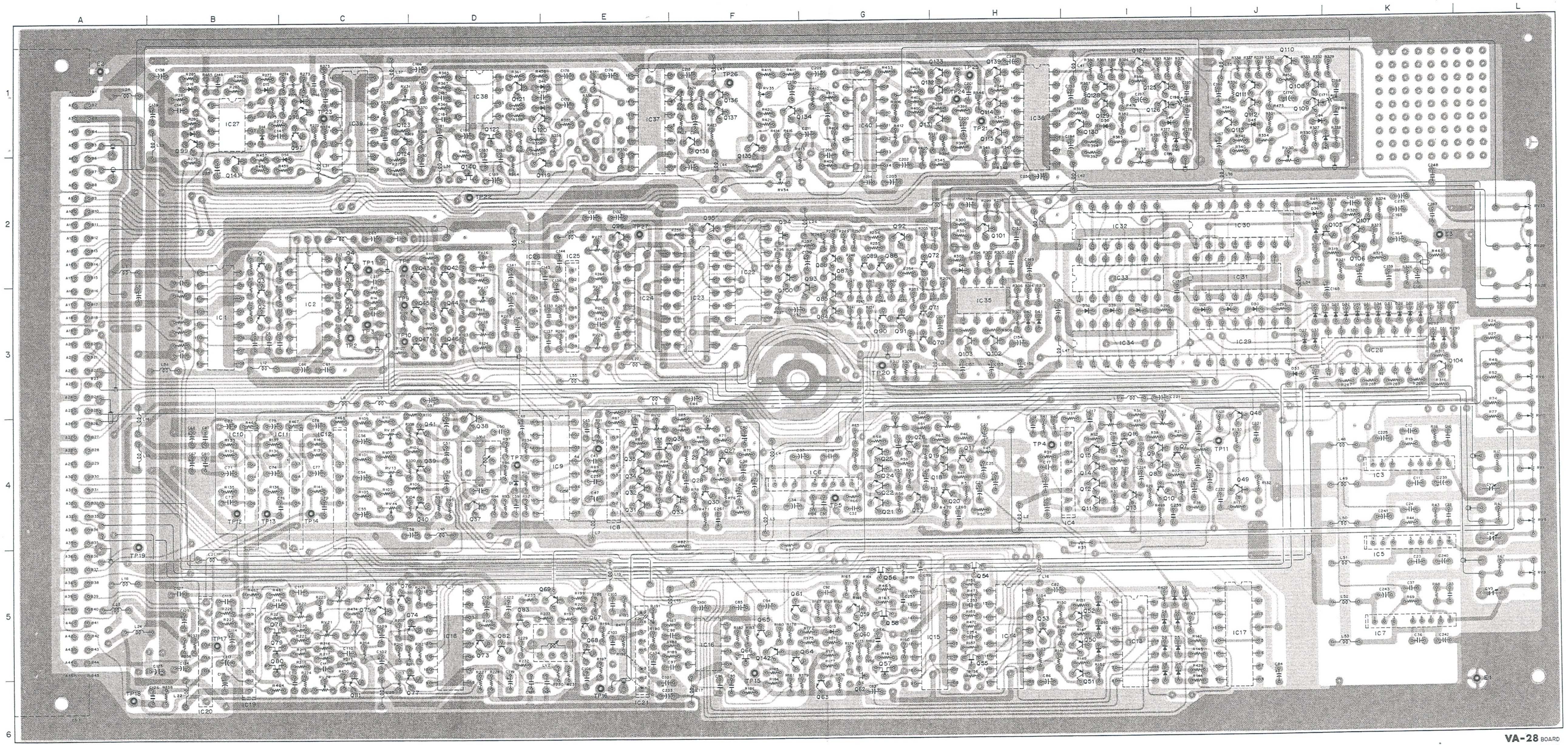


VA-28 BOARD
–SOLDERING SIDE–
1-615-203-11
CCU-360 (UC, J)
CCU-360P (AE)

CN1	A - 1	Q12	I - 4
		Q13	I - 4
CV1	L - 4	Q14	I - 4
CV2	L - 5	Q15	I - 4
CV3	L - 5	Q16	I - 4
		Q17	H - 4
D1	D - 4	Q18	H - 4
D2	I - 5	Q19	H - 4
D3	I - 5	Q20	H - 4
D4	I - 5	Q21	G - 4
D5	I - 5	Q22	G - 4
D6	I - 5	Q23	G - 4
D7	I - 5	Q24	G - 4
D8	I - 5	Q25	G - 4
D9	I - 5	Q26	G - 4
D10	I - 5	Q27	F - 4
D11	I - 5	Q28	F - 4
D12	I - 5	Q29	F - 4
D13	G - 5	Q30	F - 4
D14	B - 1	Q31	E - 4
D15	B - 1	Q32	E - 4
D16	C - 1	Q33	F - 4
D17	B - 1	Q34	E - 4
D18	B - 1	Q35	E - 4
D19	K - 3	Q36	F - 4
D20	J - 3	Q37	D - 4
D21	K - 3	Q38	D - 4
D22	J - 3	Q39	D - 4
D23	K - 3	Q40	D - 4
D24	K - 3	Q41	D - 4
D25	K - 3	Q42	D - 2
D26	J - 3	Q43	D - 2
D27	J - 3	Q44	D - 3
D28	K - 3	Q45	D - 3
D29	K - 3	Q46	D - 3
D30	J - 3	Q47	D - 3
D31	K - 3	Q48	J - 4
D32	K - 3	Q49	J - 4
D33	J - 3	Q50	I - 5
D34	K - 3	Q51	I - 5
D35	J - 2	Q52	I - 5
D36	J - 2	Q53	H - 5
D37	I - 3	Q54	H - 5
D38	I - 3	Q55	H - 5
D39	I - 3	Q56	G - 5
D40	H - 2	Q57	G - 5
D41	H - 3	Q58	G - 5
D42	H - 3	Q59	G - 5
D43	K - 1	Q60	G - 5
D44	J - 1	Q61	F - 5
D45	J - 1	Q62	G - 6
D46	E - 1	Q63	G - 6
D47	E - 1	Q64	F - 5
D48	I - 1	Q65	F - 5
D49	I - 1	Q66	F - 5
D50	I - 1	Q67	E - 5
D51	K - 3	Q68	E - 5
D52	K - 3	Q69	E - 5
D53	J - 3	Q70	G - 3
D54	C - 2	Q71	G - 3
		Q72	G - 2
E1	L - 6	Q73	D - 5
E2	A - 1	Q74	D - 5
E3	K - 2	Q75	C - 5
		Q76	C - 5
IC1	B - 3	Q77	D - 5
IC2	C - 3	Q78	B - 5
IC3	K - 4	Q79	B - 5
IC4	I - 4	Q80	B - 5
IC5	K - 5	Q81	C - 6
IC6	G - 4	Q82	D - 5
IC7	K - 5	Q83	D - 5
IC8	E - 4	Q84	G - 3
IC9	E - 4	Q85	G - 3
IC10	B - 4	Q86	G - 2
IC11	C - 4	Q87	G - 2
IC12	C - 4	Q88	G - 2
IC13	I - 5	Q89	G - 2
IC14	H - 5	Q90	G - 3
IC15	H - 5	Q91	G - 3
IC16	F - 5	Q92	G - 2
IC17	J - 5	Q93	G - 3
IC18	D - 5	Q94	F - 2
IC19	B - 5	Q95	F - 2
IC20	B - 5	Q96	E - 2
IC21	E - 5	Q97	C - 1
IC22	F - 2	Q98	C - 1
IC23	F - 3	Q99	B - 1
IC24	E - 3	Q100	F - 2
IC25	E - 3	Q101	H - 2
IC26	D - 3	Q102	H - 3
IC27	B - 1	Q103	H - 3
IC28	K - 3	Q104	K - 3
IC29	J - 3	Q105	K - 2
IC30	J - 2	Q106	K - 2
IC31	J - 2	Q107	K - 2
IC32	I - 2	Q108	J - 1
IC33	I - 2	Q109	J - 1
IC34	I - 3	Q110	J - 1
IC35	H - 3	Q111	J - 1
IC36	H - 1	Q112	J - 1
IC37	E - 1	Q113	J - 1
IC38	D - 1	Q114	H - 1
IC39	C - 1	Q115	H - 1
IC40	G - 1	Q119	E - 2
		Q120	E - 1
LV1	D - 4	Q121	D - 1
LV2	E - 5	Q122	D - 1
		Q123	C - 1
Q1	B - 2	Q124	C - 1
Q2	B - 3	Q125	I - 1
Q3	B - 3	Q126	I - 1
Q4	C - 2	Q127	I - 1
Q5	C - 3	Q128	I - 1
Q6	C - 3	Q129	I - 1
Q7	I - 4	Q130	I - 1
Q8	I - 4	Q131	H - 1
Q9	I - 4	Q132	H - 1
Q10	I - 4	Q133	H - 1
Q11	I - 4	Q134	F - 1

VA-28 BOARD
– SOLDERING SIDE –

Parts No. 1-615-203-**12**

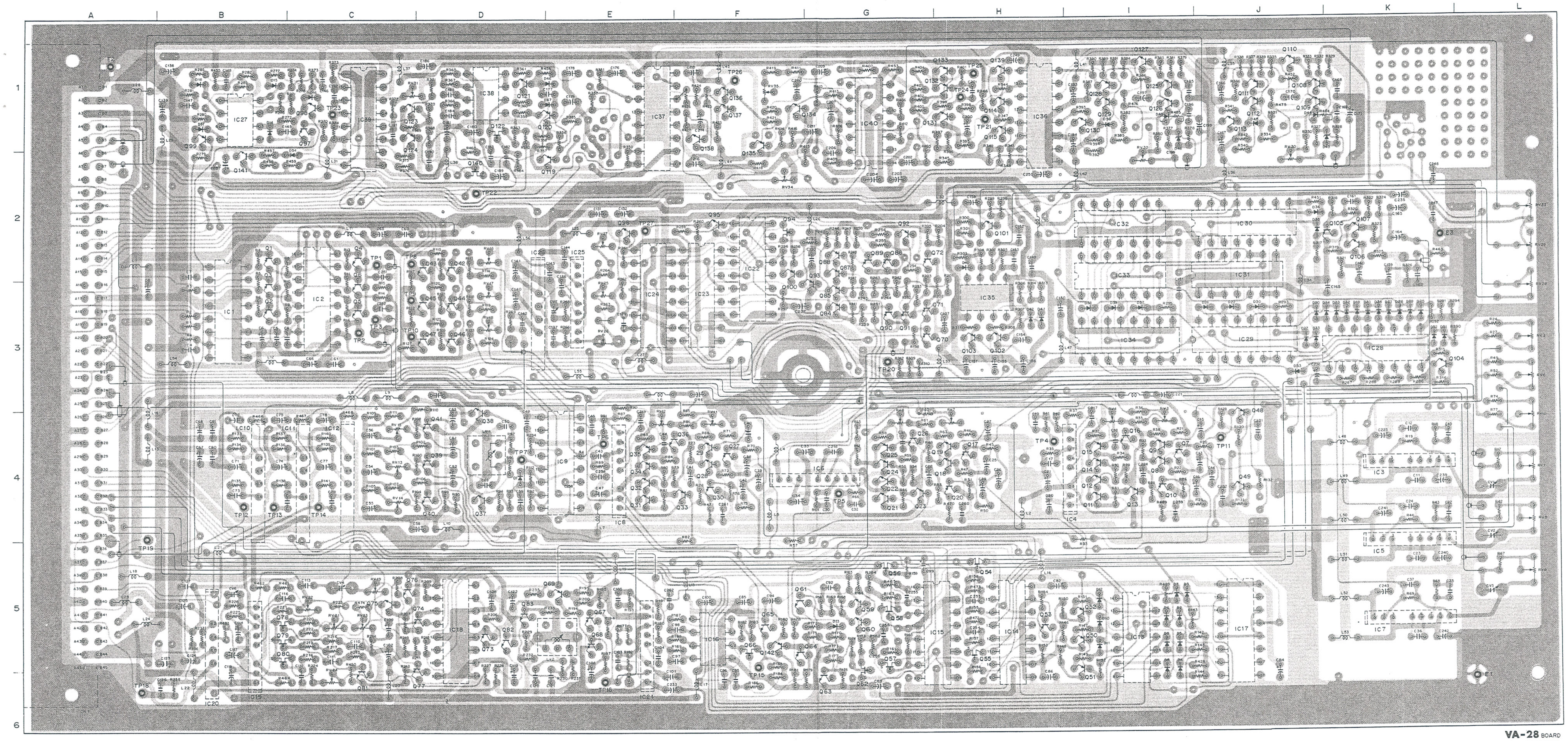


VA-28 BOARD
–SOLDERING SIDE–
1-615-203-12
CCU-360 (UC, J)
CCU-360P (AE)

CN1	A - 1
CV1	L - 4
CV2	L - 5
CV3	L - 5
D1	D - 4
D2	I - 5
D3	I - 5
D4	I - 5
D5	I - 5
D6	I - 5
D7	I - 5
D8	I - 5
D9	I - 5
D10	I - 5
D11	I - 5
D12	I - 5
D13	G - 5
D14	B - 1
D15	B - 1
D16	C - 1
D17	B - 1
D18	B - 1
D19	K - 3
D20	J - 3
D21	K - 3
D22	J - 3
D23	K - 3
D24	K - 3
D25	K - 3
D26	J - 3
D27	J - 3
D28	K - 3
D29	K - 3
D30	J - 3
D31	K - 3
D32	K - 3
D33	J - 3
D34	K - 3
D35	J - 2
D36	J - 2
D37	I - 3
D38	I - 3
D39	I - 3
D40	H - 2
D41	H - 3
D42	H - 3
D43	K - 1
D44	J - 1
D45	J - 1
D46	E - 1
D47	E - 1
D48	I - 1
D49	I - 1
D50	I - 1
D51	K - 3
D52	K - 3
D53	J - 3
D54	C - 2
E1	L - 6
E2	A - 1
E3	K - 2
IC1	B - 3
IC2	C - 3
IC3	K - 4
IC4	I - 4
IC5	K - 5
IC6	G - 4
IC7	K - 5
IC8	E - 4
IC9	E - 4
IC10	B - 4
IC11	C - 4
IC12	C - 4
IC13	I - 5
IC14	H - 5
IC15	H - 5
IC16	F - 5
IC17	J - 5
IC18	D - 5
IC19	B - 5
IC20	B - 5
IC21	E - 5
IC22	F - 2
IC23	F - 3
IC24	E - 3
IC25	E - 3
IC26	D - 3
IC27	B - 1
IC28	K - 3
IC29	J - 3
IC30	J - 2
IC31	J - 2
IC32	I - 2
IC33	I - 2
IC34	I - 3
IC35	H - 3
IC36	H - 1
IC37	E - 1
IC38	D - 1
IC39	C - 1
IC40	G - 1
LV1	D - 4
LV2	E - 5
Q1	B - 2
Q2	B - 3
Q3	B - 3
Q4	C - 2
Q5	C - 3
Q6	C - 3
Q7	I - 4
Q8	I - 4
Q9	I - 4
Q10	I - 4
Q11	I - 4
Q12	I - 4
Q13	I - 4
Q14	I - 4
Q15	I - 4
Q16	I - 4
Q17	H - 4
Q18	H - 4
Q19	H - 4
Q20	H - 4
Q21	G - 4
Q22	G - 4
Q23	G - 4
Q24	G - 4
Q25	G - 4
Q26	G - 4
Q27	F - 4
Q28	F - 4
Q29	F - 4
Q30	F - 4
Q31	E - 4
Q32	E - 4
Q33	F - 4
Q34	E - 4
Q35	E - 4
Q36	F - 4
Q37	D - 4
Q38	D - 4
Q39	D - 4
Q40	D - 4
Q41	D - 4
Q42	D - 2
Q43	D - 2
Q44	D - 3
Q45	D - 3
Q46	D - 3
Q47	D - 3
Q48	J - 4
Q49	J - 4
Q50	I - 5
Q51	I - 5
Q52	I - 5
Q53	H - 5
Q54	H - 5
Q55	H - 5
Q56	G - 5
Q57	G - 5
Q58	G - 5
Q59	G - 5
Q60	G - 5
Q61	F - 5
Q62	G - 6
Q63	G - 6
Q64	F - 5
Q65	F - 5
Q66	F - 5
Q67	E - 5
Q68	E - 5
Q69	E - 5
Q70	G - 3
Q71	G - 3
Q72	G - 2
Q73	D - 5
Q74	D - 5
Q75	C - 5
Q76	C - 5
Q77	D - 5
Q78	B - 5
Q79	B - 5
Q80	B - 5
Q81	C - 6
Q82	D - 5
Q83	D - 5
Q84	G - 3
Q85	G - 3
Q86	G - 2
Q87	G - 2
Q88	G - 2
Q89	G - 2
Q90	G - 3
Q91	G - 3
Q92	G - 2
Q93	G - 3
Q94	F - 2
Q95	F - 2
Q96	E - 2
Q97	C - 1
Q98	C - 1
Q99	B - 1
Q100	F - 2
Q101	H - 2
Q102	H - 3
Q103	H - 3
Q104	K - 3
Q105	K - 2
Q106	K - 2
Q107	K - 2
Q108	J - 1
Q109	J - 1
Q110	J - 1
Q111	J - 1
Q112	J - 1
Q113	J - 1
Q114	H - 1
Q115	H - 1
Q119	E - 2
Q120	E - 1
Q121	D - 1
Q122	D - 1
Q123	C - 1
Q124	C - 1
Q125	I - 1
Q126	I - 1
Q127	I - 1
Q128	I - 1
Q129	I - 1
Q130	I - 1
Q131	H - 1
Q132	H - 1
Q133	H - 1
Q134	F - 1
Q135	F - 1
Q136	F - 1
Q137	F - 1
Q138	F - 1
Q139	H - 1
Q140	D - 2
Q141	B - 2
Q142	F - 5
RV1	L - 4
RV2	L - 3
RV3	I - 4
RV4	I - 4
RV5	L - 4
RV6	L - 3
RV7	H - 4
RV8	G - 4
RV9	L - 5
RV10	L - 4
RV11	F - 4
RV12	E - 4
RV13	C - 4
RV14	C - 4
RV15	C - 4
RV16	D - 2
RV17	D - 3
RV18	D - 3
RV19	C - 5
RV20	C - 5
RV21	C - 5
RV22	C - 5
RV23	C - 5
RV24	C - 6
RV25	E - 3
RV26	E - 3
RV27	E - 2
RV28	L - 3
RV29	L - 2
RV30	J - 2
RV31	C - 1
RV32	I - 2
RV33	L - 2
RV34	F - 2
RV35	F - 1
TP1	C - 2
TP2	C - 3
TP3	C - 3
TP4	H - 4
TP5	G - 4
TP6	E - 4
TP7	D - 4
TP8	C - 2
TP9	C - 3
TP10	C - 3
TP11	J - 4
TP12	B - 4
TP13	B - 4
TP14	C - 4
TP15	F - 5
TP16	E - 6
TP17	B - 5
TP18	A - 6
TP19	A - 4
TP20	G - 3
TP21	H - 1
TP22	D - 2
TP23	C - 1
TP24	H - 1
TP25	H - 1
TP26	F - 1
TP27	E - 2

VA-28 BOARD
-SOLDERING SIDE-

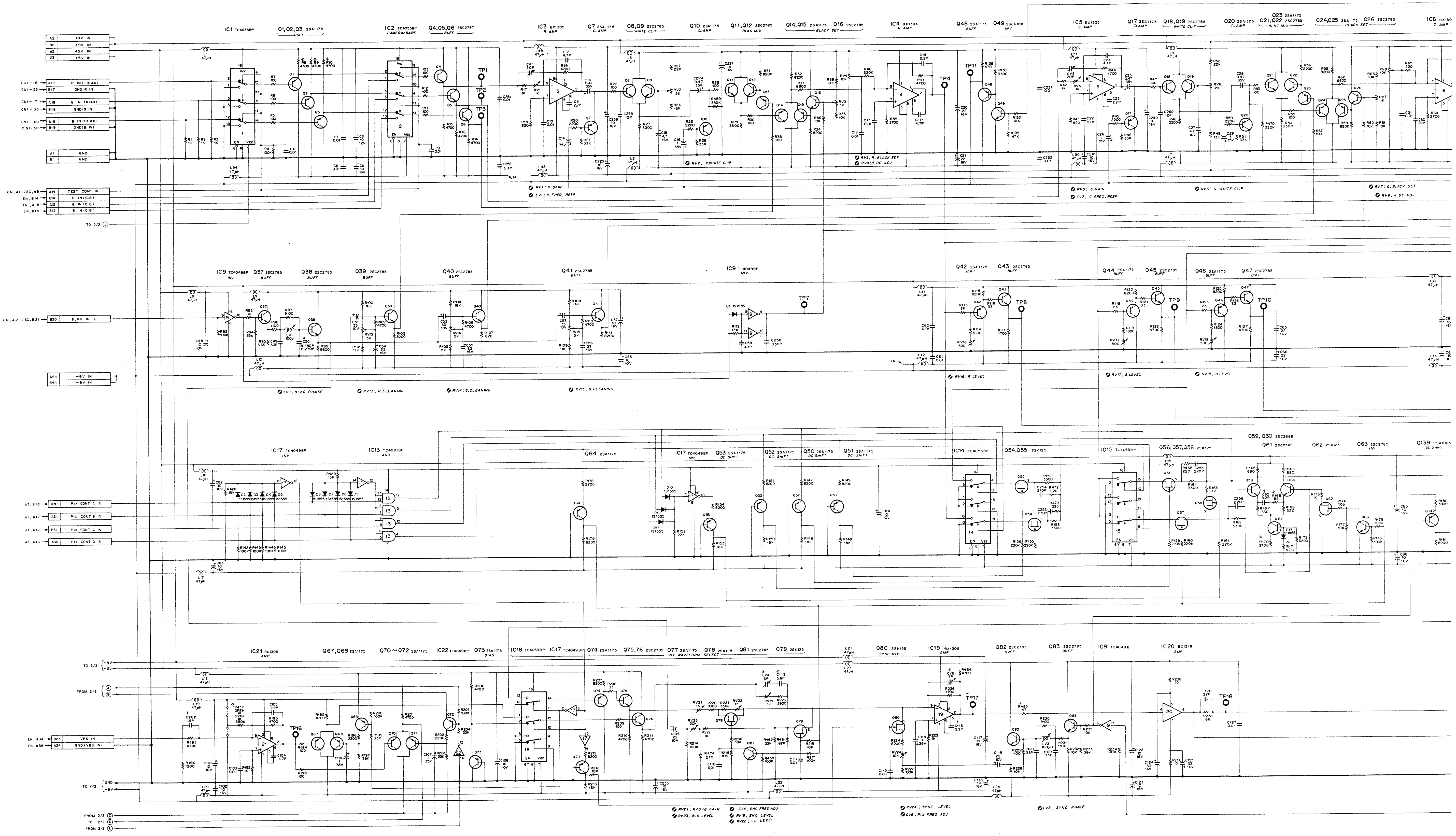
Parts No. 1-615-203-**13**

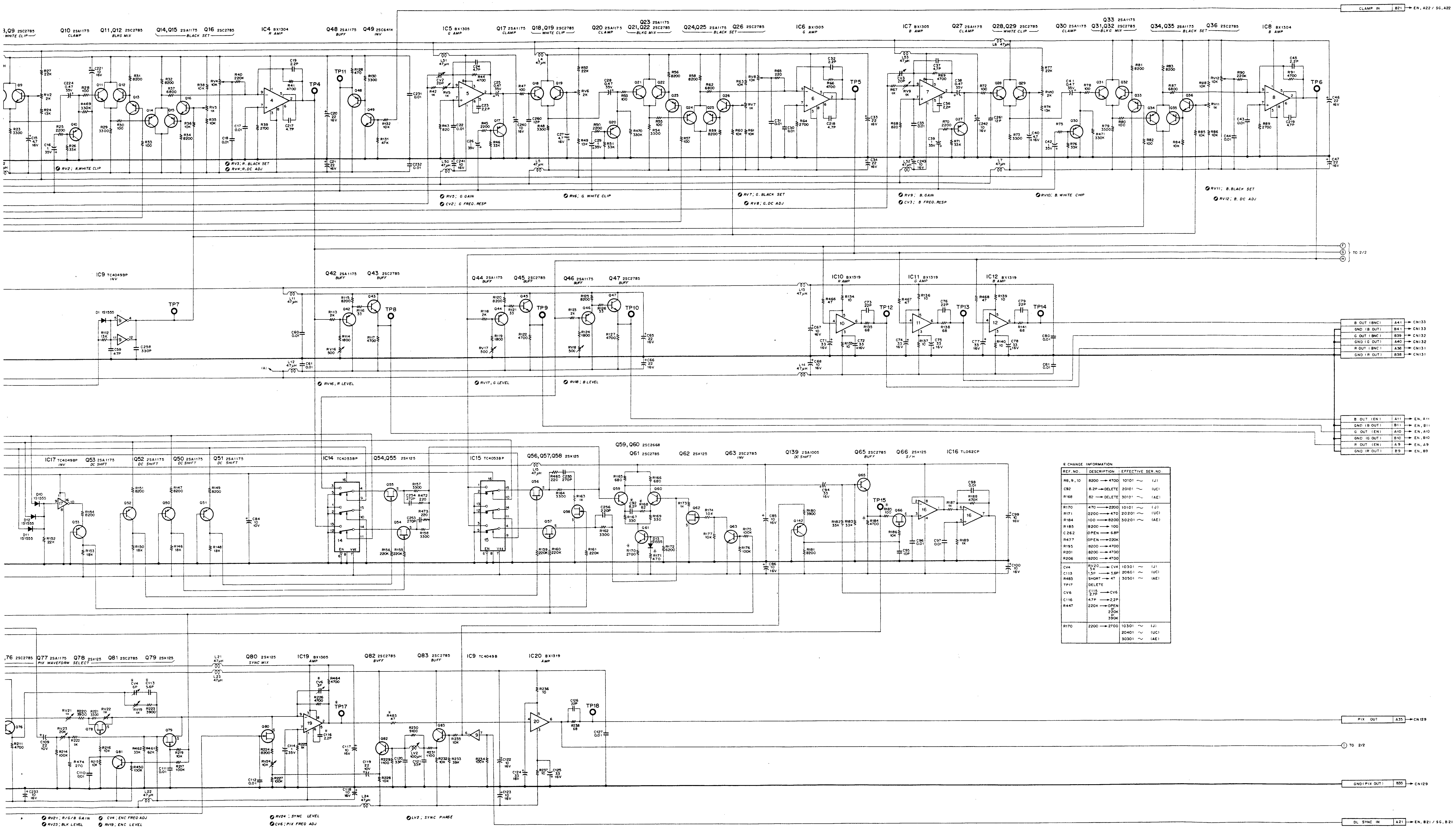


VA-28 BOARD
-SOLDERING SIDE-
1-615-203-13
CCU-360 (UC, J)
CCU-360P (AE)

CN1	A - 1
CV1	L - 4
CV2	L - 5
CV3	L - 5
CV6	B - 5
CV7	E - 3
D1	D - 4
D2	I - 5
D3	I - 5
D4	I - 5
D5	I - 5
D6	I - 5
D7	I - 5
D8	I - 5
D9	I - 5
D10	I - 5
D11	I - 5
D12	I - 5
D13	G - 5
D14	B - 1
D15	B - 1
D16	C - 1
D17	B - 1
D18	B - 1
D19	K - 3
D20	J - 3
D21	K - 3
D22	J - 3
D23	K - 3
D24	K - 3
D25	K - 3
D26	J - 3
D27	J - 3
D28	K - 3
D29	K - 3
D30	J - 3
D31	K - 3
D32	K - 3
D33	J - 3
D34	K - 3
D35	J - 2
D36	J - 2
D37	I - 3
D38	I - 3
D39	I - 3
D40	H - 2
D41	H - 3
D42	H - 3
D43	K - 1
D44	J - 1
D45	J - 1
D46	E - 1
D47	E - 1
D48	I - 1
D49	I - 1
D50	I - 1
D51	K - 3
D52	K - 3
D53	J - 3
D54	C - 2
E1	L - 6
E2	A - 1
E3	K - 2
IC1	B - 3
IC2	C - 3
IC3	K - 4
IC4	I - 4
IC5	K - 5
IC6	G - 4
IC7	K - 5
IC8	E - 4
IC9	E - 4
IC10	B - 4
IC11	C - 4
IC12	C - 4
IC13	I - 5
IC14	H - 5
IC15	H - 5
IC16	F - 5
IC17	J - 5
IC18	D - 5
IC19	B - 5
IC20	B - 5
IC21	E - 5
IC22	F - 2
IC23	F - 3
IC24	E - 3
IC25	E - 3
IC26	D - 3
IC27	B - 1
IC28	K - 3
IC29	J - 3
IC30	J - 2
IC31	J - 2
IC32	I - 2
IC33	I - 2
IC34	I - 3
IC35	H - 3
IC36	H - 1
IC37	E - 1
IC38	D - 1
IC39	C - 1
IC40	G - 1
LV1	D - 4
LV2	E - 5
Q1	B - 2
Q2	B - 3
Q3	B - 3
Q4	C - 2
Q5	C - 3
Q6	C - 3
Q7	I - 4
Q8	I - 4
Q9	I - 4
Q10	I - 4
Q11	I - 4
Q12	I - 4
Q13	I - 4
Q14	I - 4
Q15	I - 4
Q16	I - 4
Q17	H - 4
Q18	H - 4
Q19	H - 4
Q20	H - 4
Q21	G - 4
Q22	G - 4
Q23	G - 4
Q24	G - 4
Q25	G - 4
Q26	G - 4
Q27	F - 4
Q28	F - 4
Q29	F - 4
Q30	F - 4
Q31	E - 4
Q32	E - 4
Q33	F - 4
Q34	E - 4
Q35	E - 4
Q36	F - 4
Q37	D - 4
Q38	D - 4
Q39	D - 4
Q40	D - 4
Q41	D - 4
Q42	D - 2
Q43	D - 2
Q44	D - 3
Q45	D - 3
Q46	D - 3
Q47	D - 3
Q48	J - 4
Q49	J - 4
Q50	I - 5
Q51	I - 5
Q52	I - 5
Q53	H - 5
Q54	H - 5
Q55	H - 5
Q56	G - 5
Q57	G - 5
Q58	G - 5
Q59	G - 5
Q60	G - 5
Q61	F - 5
Q62	G - 6
Q63	G - 6
Q64	F - 5
Q65	F - 5
Q66	F - 5
Q67	E - 5
Q68	E - 5
Q69	E - 5
Q70	G - 3
Q71	G - 3
Q72	G - 2
Q73	D - 5
Q74	D - 5
Q75	C - 5
Q76	C - 5
Q77	D - 5
Q78	B - 5
Q79	B - 5
Q80	B - 5
Q81	C - 6
Q82	D - 5
Q83	D - 5
Q84	G - 3
Q85	G - 3
Q86	G - 2
Q87	G - 2
Q88	G - 2
Q89	G - 2
Q90	G - 3
Q91	G - 3
Q92	G - 2
Q93	G - 3
Q94	F - 2
Q95	F - 2
Q96	E - 2
Q97	C - 1
Q98	C - 1
Q99	B - 1
Q100	F - 2
Q101	H - 2
Q102	H - 3
Q103	H - 3
Q104	K - 3
Q105	K - 2
Q106	K - 2
Q107	K - 2
Q108	J - 1
Q109	J - 1
Q110	J - 1
Q111	J - 1
Q112	J - 1
Q113	J - 1
Q114	H - 1
Q115	H - 1
Q119	E - 2
Q120	E - 1
Q121	D - 1
Q122	D - 1
Q123	C - 1
Q124	C - 1
Q125	I - 1
Q126	I - 1
Q127	I - 1
Q128	I - 1
Q129	I - 1
Q130	I - 1
Q131	H - 1
Q132	H - 1
Q133	H - 1
Q134	F - 1
Q135	F - 1
Q136	F - 1
Q137	F - 1
Q138	F - 1
Q139	H - 1
Q140	D - 2
Q141	B - 2
Q142	F - 5
RV1	L - 4
RV2	L - 3
RV3	I - 4
RV4	I - 4
RV5	L - 4
RV6	L - 3
RV7	H - 4
RV8	G - 4
RV9	L - 5
RV10	L - 4
RV11	F - 4
RV12	E - 4
RV13	C - 4
RV14	C - 4
RV15	C - 4
RV16	D - 2
RV17	D - 3
RV18	D - 3
RV19	C - 5
RV20	C - 5
RV21	C - 5
RV22	C - 5
RV23	C - 5
RV24	C - 6
RV25	E - 3
RV26	E - 3
RV27	E - 2
RV28	L - 3
RV29	L - 2
RV30	J - 2
RV31	C - 1
RV32	I - 2
RV33	L - 2
RV34	F - 2
RV35	F - 1
TP1	C - 2
TP2	C - 3
TP3	C - 3
TP4	H - 4
TP5	G - 4
TP6	E - 4
TP7	D - 4
TP8	C - 2
TP9	C - 3
TP10	C - 3
TP11	J - 4
TP12	B - 4
TP13	B - 4
TP14	C - 4
TP15	F - 5
TP16	E - 6
TP17	B - 5
TP18	A - 6
TP19	A - 4
TP20	G - 3
TP21	H - 1
TP22	D - 2
TP23	C - 1
TP24	H - 1
TP25	H - 1
TP26	F - 1
TP27	E - 2

VA-28 BOARD(1/2)


IC1 TC4053BP
Q1,Q2,Q3 2SA1175 BUFF
IC2 TC4053BP CAMERA/BARS
Q4,Q5,Q6 2SC2787 BUFF
IC3 BX1305 R AMP
Q7 2SA1175 CLAMP
Q8,Q9 2SC2785 WHITE CLIP
Q10 2SA1175 CLAMP
Q11,Q12 2SC2785 BLKG MIX
Q14,Q15 2SA1175 BLACK SET
Q16 2SC2785
IC4 BX1304 R AMP
Q48 2SA1175 BUFF
Q49 2SC641K INV
IC5 BX1305 G AMP
Q17 2SA1175 CLAMP
Q18,Q19 2SC2785 WHITE CLIP
Q20 2SA1175 CLAMP
Q23 2SA1175
Q21,Q22 2SC2785 BLKG MIX
Q24,Q25 2SA1175 BLACK SET
Q26 2SC2785
IC6 BX1305 G AMP
TP1
TP2
TP3
TP4
TP11
A2 +9V IN
B2 +9V IN
A3 +5V IN
B3 +5V IN
CN1-16 A17 R IN(TRIAX)
CN1-32 B17 GND(R IN)
CN1-17 A18 G IN(TRIAX)
CN1-33 B18 GND(G IN)
CN1-49 A19 B IN(TRIAX)
CN1-50 B19 GND(B IN)
A1 GND
B1 GND
EN,A14/SG,A6 A14 TEST CONT IN
EN,B14 B14 R IN(C.B)
EN,A15 A15 G IN(C.B)
EN,B15 B15 B IN(C.B)
TO 2/2 Ⓓ
RV1; R GAIN
CV1; R FREQ. RESP
RV2; R.WHITE CLIP
RV3; R. BLACK SET
RV4; R.DC ADJ
RV5; G GAIN
CV2; G FREQ. RESP
RV6; G. WHITE CLIP
RV7; G. BLACK SET
RV8; G.DC ADJ
IC9 TC4049BP INV
Q37 2SC2785 BUFF
Q38 2SC2785
Q39 2SC2785 BUFF
Q40 2SC2785 BUFF
Q41 2SC2785 BUFF
IC9 TC4049BP INV
TP7
Q42 2SA1175 BUFF
Q43 2SC2785 BUFF
TP8
Q44 2SA1175 BUFF
Q45 2SC2785 BUFF
TP9
Q46 2SA1175 BUFF
Q47 2SC2785 BUFF
TP10
EN,A21/SG,B21 B20 BLKG IN
A44 -9V IN
B44 -9V IN
LV1; BLKG PHASE
RV13; R.CLEANING
RV14; G.CLEANING
RV15; B CLEANING
RV16; R LEVEL
RV17; G LEVEL
RV18; B LEVEL
IC17 TC4049BP INV
IC13 TC4081BP AND
Q64 2SA1175
IC17 TC4049BP INV
Q53 2SA1175 DC SHIFT
Q52 2SA1175 DC SHIFT
Q50 2SA1175 DC SHIFT
Q51 2SA1175 DC SHIFT
IC14 TC4053BP
Q54,Q55 2SK125
IC15 TC4053BP
Q56,Q57,Q58 2SK125
Q59,Q60 2SC2668
Q61 2SC2785
Q62 2SK125
Q63 2SC2785 INV
Q139 2SA1005 DC SHIFT
AT,B16 B30 PIX CONT A IN
AT,A17 A31 PIX CONT B IN
AT,B17 B31 PIX CONT C IN
AT,A16 A30 PIX CONT D IN
IC21 BX1305 AMP
Q67,Q68 2SA1175
Q70～Q72 2SA1175
IC22 TC4049BP
Q73 2SA1175 BIAS
IC18 TC4053BP
IC17 TC4049BP
Q74 2SA1175
Q75,76 2SC2785
Q77 2SA1175
Q78 2SK125
Q81 2SC2785
Q79 2SA1175
PIX WAVEFORM SELECT
Q80 2SK125 SYNC MIX
IC19 BX1305 AMP
Q82 2SC2785 BUFF
Q83 2SC2785 BUFF
IC9 TC4049B
IC20 BX1319 AMP
TP16
TP17
TP18
TO 2/2 +9V
+5V
FROM 2/2 Ⓐ Ⓑ
EN,B34 B23 VBS IN
EN,A35 A24 GND(VBS IN)
TO 2/2 GND -9V
FROM 2/2 Ⓒ
TO 2/2 Ⓓ
FROM 2/2 Ⓔ
RV21; R/G/B GAIN
RV23; BLK LEVEL
CV4; ENC FREQ ADJ
RV19; ENC LEVEL
RV22; -G LEVEL
RV24; SYNC LEVEL
CV6; PIX FREQ ADJ
LV2; SYNC PHASE


Q10 2SA1175 CLAMP
Q11,Q12 2SC2785 BLKG MIX
Q14,Q15 2SA1175 Q16 2SC2785 BLACK SET
IC4 BX1304 R AMP
Q48 2SA1175 BUFF
Q49 2SC641K INV
IC5 BX1305 G AMP
Q17 2SA1175 CLAMP
Q18,Q19 2SC2785 WHITE CLIP
Q20 2SA1175 CLAMP
Q21,Q22 2SC2785 BLKG MIX
Q23 2SA1175
Q24,Q25 2SA1175 Q26 2SC2785 BLACK SET
IC6 BX1305 G AMP
IC7 BX1305 B AMP
Q27 2SA1175 CLAMP
Q28,Q29 2SC2785 WHITE CLIP
Q30 2SA1175 CLAMP
Q31,Q32 2SC2785 BLKG MIX
Q33 2SA1175
Q34,Q35 2SA1175 Q36 2SC2785 BLACK SET
IC8 BX1304 B AMP
TP4
TP11
TP5
TP6
CLAMP IN B21 EN, A22 / SG, A22
RV2; R.WHITE CLIP
RV3; R. BLACK SET
RV4; R.DC ADJ
RV5; G GAIN
CV2; G FREQ. RESP
RV6; G WHITE CLIP
RV7; G. BLACK SET
RV8; G. DC ADJ
RV9; B GAIN
CV3; B FREQ. RESP
RV10; B. WHITE CHIP
RV11; B. BLACK SET
RV12; B. DC ADJ
TO 2/2
IC9 TC4049BP INV
TP7
Q42 2SA1175 BUFF
Q43 2SC2785
TP8
Q44 2SA1175 BUFF
Q45 2SC2785 BUFF
TP9
Q46 2SA1175 BUFF
Q47 2SC2785 BUFF
TP10
IC10 BX1319 R AMP
TP12
IC11 BX1319 G AMP
TP13
IC12 BX1319 B AMP
TP14
RV16; R LEVEL
RV17; G LEVEL
RV18; B LEVEL
B OUT (BNC) A41 CN133
GND (B OUT) B41 CN133
G OUT (BNC) B39 CN132
GND (G OUT) A40 CN132
R OUT (BNC) A38 CN131
GND (R OUT) B38 CN131
B OUT (EN) A11 EN, A11
GND (B OUT) B11 EN, B11
G OUT (EN) A10 EN, A10
GND (G OUT) B10 EN, B10
R OUT (EN) A9 EN, A9
GND (R OUT) B9 EN, B9
IC17 TC4049BP INV
Q53 2SA1175 DC SHIFT
Q52 2SA1175 DC SHIFT
Q50 2SA1175 DC SHIFT
Q51 2SA1175 DC SHIFT
IC14 TC4053BP
Q54,Q55 2SK125
IC15 TC4053BP
Q56,Q57,Q58 2SK125
Q59,Q60 2SC2668
Q61 2SC2785
Q62 2SK125
Q63 2SC2785 INV
Q139 2SA1005 DC SHIFT
Q65 2SC2785 BUFF
Q66 2SK125 S/H
IC16 TL062CP
TP15
Q77 2SA1175 Q78 2SK125 PIX WAVEFORM SELECT
Q81 2SC2785 Q79 2SK125
Q80 2SK125 SYNC MIX
IC19 BX1305 AMP
TP17
Q82 2SC2785 BUFF
Q83 2SC2785 BUFF
IC9 TC4049B
IC20 BX1319 AMP
TP18
RV21; R/G/B GAIN
RV23; BLK LEVEL
CV4; ENC FREQ ADJ
RV19; ENC LEVEL
RV22; -G LEVEL
RV24; SYNC LEVEL
CV6; PIX FREQ ADJ
LV2; SYNC PHASE
PIX OUT A35 CN129
TO 2/2
GND(PIX OUT) B35 CN129
DL SYNC IN A21 EN, B21 / SG, B21

※ CHANGE INFORMATION

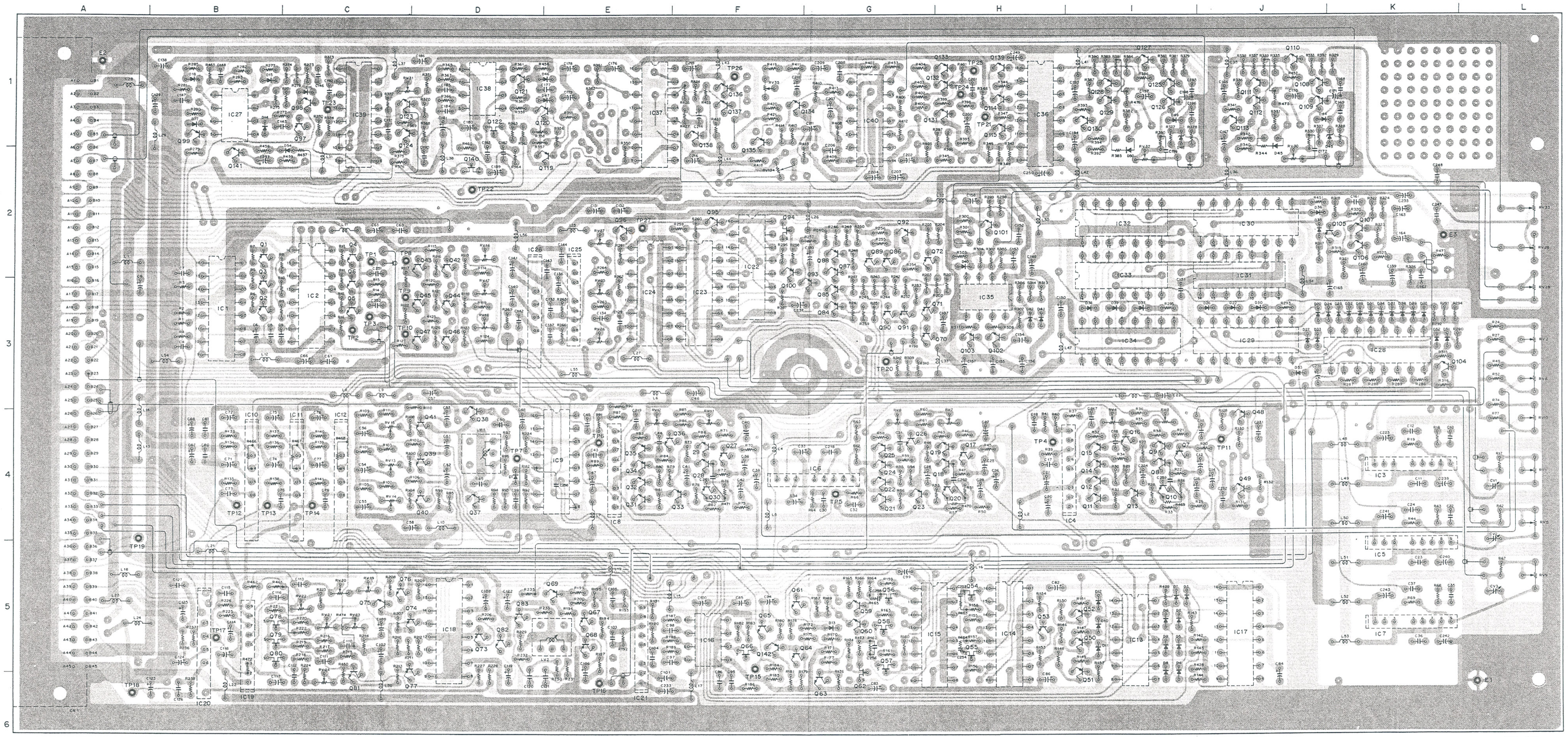
REF. NO.	DESCRIPTION	EFFECTIVE SER. NO.
R8, 9, 10 C92 R168	8200 → 4700 8.2P → DELETE 82 → DELETE	10101 ~ (J) 20101 ~ (UC) 30101 ~ (AE)
R170 R171 R184 R185 C262 R477 R195 R201 R206	470 → 2200 2200 → 470 100 → 8200 8200 → 100 OPEN → 6.8P OPEN → 220K 8200 → 4700 8200 → 4700 8200 → 4700	10101 ~ (J) 20201 ~ (UC) 30201 ~ (AE)
CV4 C113 R483 TP17 CV6 C116 R447	RV20 5K → CV4 1,5P → 5,6P SHORT → 47 DELETE C115 2.7P → CV6 4.7P → 2,2P 220K → OPEN or 220K or 390K	10301 ~ (J) 20601 ~ (UC) 30501 ~ (AE)
R170	2200 → 2700	10301 ~ (J) 20401 ~ (UC) 30301 ~ (AE)

VA-28(1/2)

CCU-360 (J) (UC)
CCU-360P (AE)

VA-28 BOARD
– SOLDERING SIDE

Parts No. 1-615-203-**11**

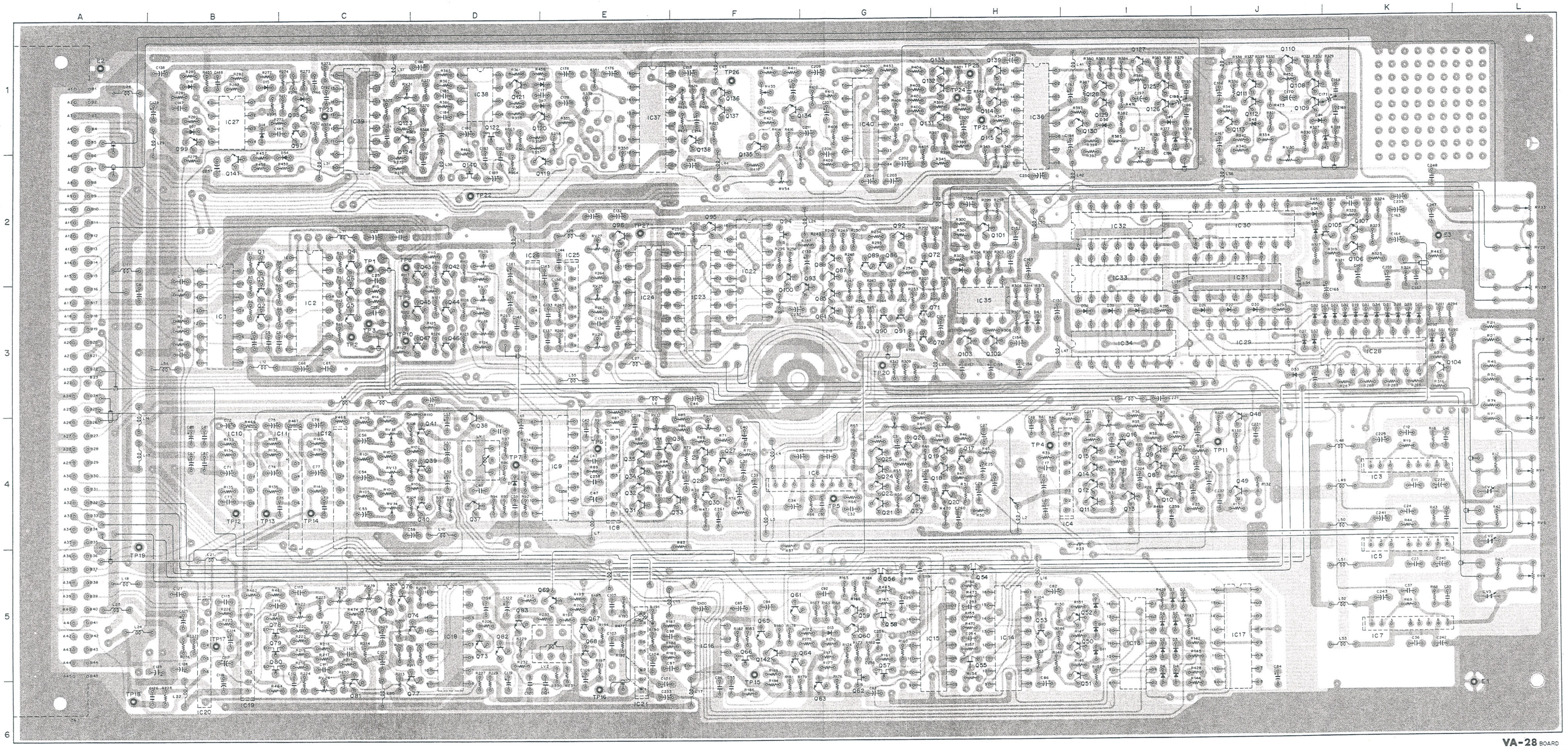


VA-28 BOARD
– SOLDERING SIDE –
1-615-203-11
CCU-360 (UC, J)
CCU-360P (AE)

CN1	A - 1
CV1	L - 4
CV2	L - 5
CV3	L - 5
D1	D - 4
D2	I - 5
D3	I - 5
D4	I - 5
D5	I - 5
D6	I - 5
D7	I - 5
D8	I - 5
D9	I - 5
D10	I - 5
D11	I - 5
D12	I - 5
D13	G - 5
D14	B - 1
D15	B - 1
D16	C - 1
D17	B - 1
D18	B - 1
D19	K - 3
D20	J - 3
D21	K - 3
D22	J - 3
D23	K - 3
D24	K - 3
D25	K - 3
D26	J - 3
D27	J - 3
D28	K - 3
D29	K - 3
D30	J - 3
D31	K - 3
D32	K - 3
D33	J - 3
D34	K - 3
D35	J - 2
D36	J - 2
D37	I - 3
D38	I - 3
D39	I - 3
D40	H - 2
D41	H - 3
D42	H - 3
D43	K - 1
D44	J - 1
D45	J - 1
D46	E - 1
D47	E - 1
D48	I - 1
D49	I - 1
D50	I - 1
D51	K - 3
D52	K - 3
D53	J - 3
D54	C - 2
E1	L - 6
E2	A - 1
E3	K - 2
IC1	B - 3
IC2	C - 3
IC3	K - 4
IC4	I - 4
IC5	K - 5
IC6	G - 4
IC7	K - 5
IC8	E - 4
IC9	E - 4
IC10	B - 4
IC11	C - 4
IC12	C - 4
IC13	I - 5
IC14	H - 5
IC15	H - 5
IC16	F - 5
IC17	J - 5
IC18	D - 5
IC19	B - 5
IC20	B - 5
IC21	E - 5
IC22	F - 2
IC23	F - 3
IC24	E - 3
IC25	E - 3
IC26	D - 3
IC27	B - 1
IC28	K - 3
IC29	J - 3
IC30	J - 2
IC31	J - 2
IC32	I - 2
IC33	I - 2
IC34	I - 3
IC35	H - 3
IC36	H - 1
IC37	E - 1
IC38	D - 1
IC39	C - 1
IC40	G - 1
LV1	D - 4
LV2	E - 5
Q1	B - 2
Q2	B - 3
Q3	B - 3
Q4	C - 2
Q5	C - 3
Q6	C - 3
Q7	I - 4
Q8	I - 4
Q9	I - 4
Q10	I - 4
Q11	I - 4
Q12	I - 4
Q13	I - 4
Q14	I - 4
Q15	I - 4
Q16	I - 4
Q17	H - 4
Q18	H - 4
Q19	H - 4
Q20	H - 4
Q21	G - 4
Q22	G - 4
Q23	G - 4
Q24	G - 4
Q25	G - 4
Q26	G - 4
Q27	F - 4
Q28	F - 4
Q29	F - 4
Q30	F - 4
Q31	E - 4
Q32	E - 4
Q33	F - 4
Q34	E - 4
Q35	E - 4
Q36	F - 4
Q37	D - 4
Q38	D - 4
Q39	D - 4
Q40	D - 4
Q41	D - 4
Q42	D - 2
Q43	D - 2
Q44	D - 3
Q45	D - 3
Q46	D - 3
Q47	D - 3
Q48	J - 4
Q49	J - 4
Q50	I - 5
Q51	I - 5
Q52	I - 5
Q53	H - 5
Q54	H - 5
Q55	H - 5
Q56	G - 5
Q57	G - 5
Q58	G - 5
Q59	G - 5
Q60	G - 5
Q61	F - 5
Q62	G - 6
Q63	G - 6
Q64	F - 5
Q65	F - 5
Q66	F - 5
Q67	E - 5
Q68	E - 5
Q69	E - 5
Q70	G - 3
Q71	G - 3
Q72	G - 2
Q73	D - 5
Q74	D - 5
Q75	C - 5
Q76	C - 5
Q77	D - 5
Q78	B - 5
Q79	B - 5
Q80	B - 5
Q81	C - 6
Q82	D - 5
Q83	D - 5
Q84	G - 3
Q85	G - 3
Q86	G - 2
Q87	G - 2
Q88	G - 2
Q89	G - 2
Q90	G - 3
Q91	G - 3
Q92	G - 2
Q93	G - 3
Q94	F - 2
Q95	F - 2
Q96	E - 2
Q97	C - 1
Q98	C - 1
Q99	B - 1
Q100	F - 2
Q101	H - 2
Q102	H - 3
Q103	H - 3
Q104	K - 3
Q105	K - 2
Q106	K - 2
Q107	K - 2
Q108	J - 1
Q109	J - 1
Q110	J - 1
Q111	J - 1
Q112	J - 1
Q113	J - 1
Q114	H - 1
Q115	H - 1
Q119	E - 2
Q120	E - 1
Q121	D - 1
Q122	D - 1
Q123	C - 1
Q124	C - 1
Q125	I - 1
Q126	I - 1
Q127	I - 1
Q128	I - 1
Q129	I - 1
Q130	I - 1
Q131	H - 1
Q132	H - 1
Q133	H - 1
Q134	F - 1
Q135	F - 1
Q136	F - 1
Q137	F - 1
Q138	F - 1
Q139	H - 1
Q140	D - 2
Q141	B - 2
Q142	F - 5
RV1	L - 4
RV2	L - 3
RV3	I - 4
RV4	I - 4
RV5	L - 4
RV6	L - 3
RV7	H - 4
RV8	G - 4
RV9	L - 5
RV10	L - 4
RV11	F - 4
RV12	E - 4
RV13	C - 4
RV14	C - 4
RV15	C - 4
RV16	D - 2
RV17	D - 3
RV18	D - 3
RV19	C - 5
RV20	C - 5
RV21	C - 5
RV22	C - 5
RV23	C - 5
RV24	C - 6
RV25	E - 3
RV26	E - 3
RV27	E - 2
RV28	L - 3
RV29	L - 2
RV30	J - 2
RV31	C - 1
RV32	I - 2
RV33	L - 2
RV34	F - 2
RV35	F - 1
TP1	C - 2
TP2	C - 3
TP3	C - 3
TP4	H - 4
TP5	G - 4
TP6	E - 4
TP7	D - 4
TP8	C - 2
TP9	C - 3
TP10	C - 3
TP11	J - 4
TP12	B - 4
TP13	B - 4
TP14	C - 4
TP15	F - 5
TP16	E - 6
TP17	B - 5
TP18	A - 6
TP19	A - 4
TP20	G - 3
TP21	H - 1
TP22	D - 2
TP23	C - 1
TP24	H - 1
TP25	H - 1
TP26	F - 1
TP27	E - 2

VA-28 BOARD
– SOLDERING SIDE –

Parts No. 1-615-203-**12**

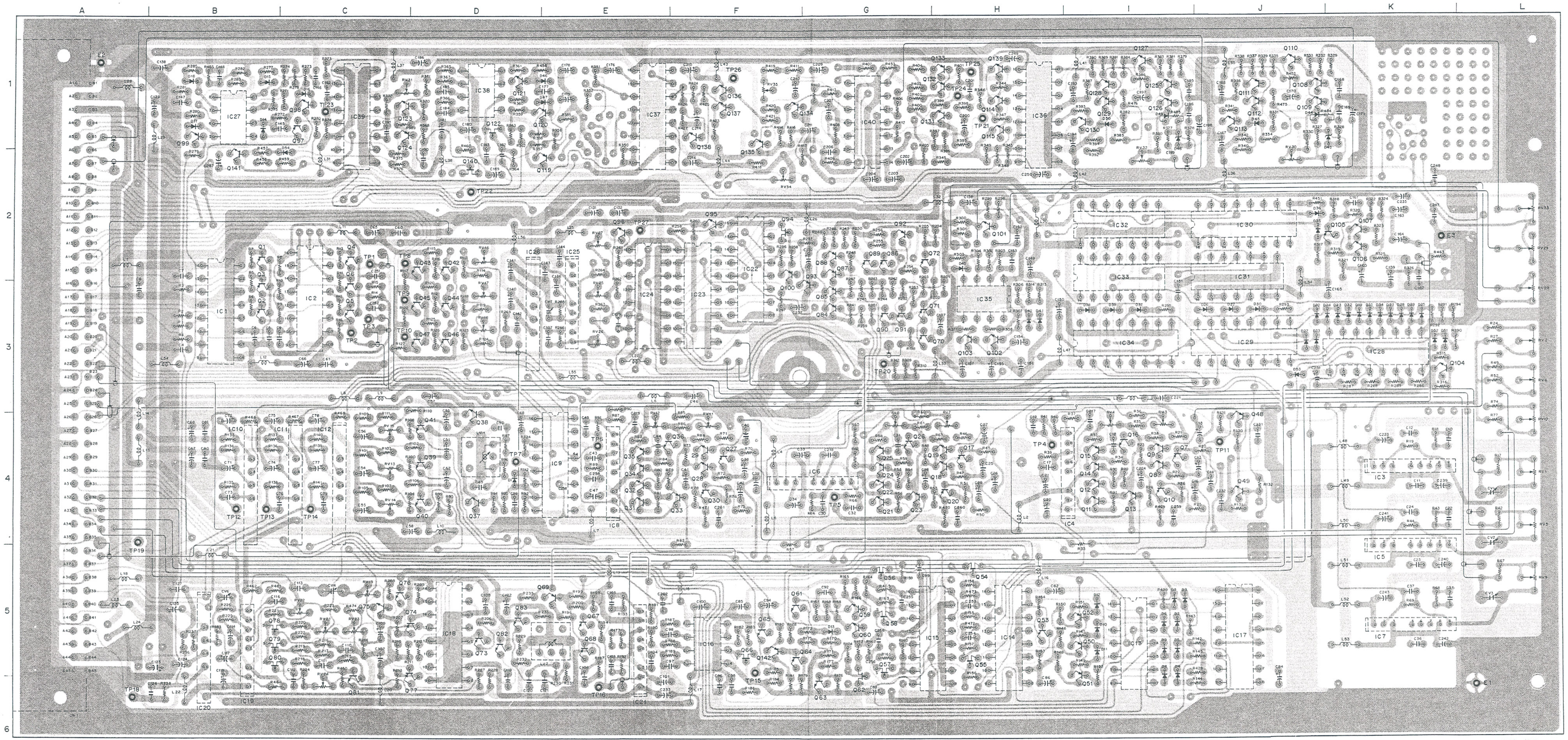


VA-28 BOARD
– SOLDERING SIDE –
1-615-203-12
CCU-360 (UC, J)
CCU-360P (AE)

CN1	A · 1
CV1	L · 4
CV2	L · 5
CV3	L · 5
D1	D · 4
D2	I · 5
D3	I · 5
D4	I · 5
D5	I · 5
D6	I · 5
D7	I · 5
D8	I · 5
D9	I · 5
D10	I · 5
D11	I · 5
D12	I · 5
D13	G · 5
D14	B · 1
D15	B · 1
D16	C · 1
D17	B · 1
D18	B · 1
D19	K · 3
D20	J · 3
D21	K · 3
D22	J · 3
D23	K · 3
D24	K · 3
D25	K · 3
D26	J · 3
D27	J · 3
D28	K · 3
D29	K · 3
D30	J · 3
D31	K · 3
D32	K · 3
D33	J · 3
D34	K · 3
D35	J · 2
D36	J · 2
D37	I · 3
D38	I · 3
D39	I · 3
D40	H · 2
D41	H · 3
D42	H · 3
D43	K · 1
D44	J · 1
D45	J · 1
D46	E · 1
D47	E · 1
D48	I · 1
D49	I · 1
D50	I · 1
D51	K · 3
D52	K · 3
D53	J · 3
D54	C · 2
E1	L · 6
E2	A · 1
E3	K · 2
IC1	B · 3
IC2	C · 3
IC3	K · 4
IC4	I · 4
IC5	K · 5
IC6	G · 4
IC7	K · 5
IC8	E · 4
IC9	E · 4
IC10	B · 4
IC11	C · 4
IC12	C · 4
IC13	I · 5
IC14	H · 5
IC15	H · 5
IC16	F · 5
IC17	J · 5
IC18	D · 5
IC19	B · 5
IC20	B · 5
IC21	E · 5
IC22	F · 2
IC23	F · 3
IC24	E · 3
IC25	E · 3
IC26	D · 3
IC27	B · 1
IC28	K · 3
IC29	J · 3
IC30	J · 2
IC31	J · 2
IC32	I · 2
IC33	I · 2
IC34	I · 3
IC35	H · 3
IC36	H · 1
IC37	E · 1
IC38	D · 1
IC39	C · 1
IC40	G · 1
LV1	D · 4
LV2	E · 5
Q1	B · 2
Q2	B · 3
Q3	B · 3
Q4	C · 2
Q5	C · 3
Q6	C · 3
Q7	I · 4
Q8	I · 4
Q9	I · 4
Q10	I · 4
Q11	I · 4
Q12	I · 4
Q13	I · 4
Q14	I · 4
Q15	I · 4
Q16	I · 4
Q17	H · 4
Q18	H · 4
Q19	H · 4
Q20	H · 4
Q21	G · 4
Q22	G · 4
Q23	G · 4
Q24	G · 4
Q25	G · 4
Q26	G · 4
Q27	F · 4
Q28	F · 4
Q29	F · 4
Q30	F · 4
Q31	E · 4
Q32	E · 4
Q33	F · 4
Q34	E · 4
Q35	E · 4
Q36	F · 4
Q37	D · 4
Q38	D · 4
Q39	D · 4
Q40	D · 4
Q41	D · 4
Q42	D · 2
Q43	D · 2
Q44	D · 3
Q45	D · 3
Q46	D · 3
Q47	D · 3
Q48	J · 4
Q49	J · 4
Q50	I · 5
Q51	I · 5
Q52	I · 5
Q53	H · 5
Q54	H · 5
Q55	H · 5
Q56	G · 5
Q57	G · 5
Q58	G · 5
Q59	G · 5
Q60	G · 5
Q61	F · 5
Q62	G · 6
Q63	G · 6
Q64	F · 5
Q65	F · 5
Q66	F · 5
Q67	E · 5
Q68	E · 5
Q69	E · 5
Q70	G · 3
Q71	G · 3
Q72	G · 2
Q73	D · 5
Q74	D · 5
Q75	C · 5
Q76	C · 5
Q77	D · 5
Q78	B · 5
Q79	B · 5
Q80	B · 5
Q81	C · 6
Q82	D · 5
Q83	D · 5
Q84	G · 3
Q85	G · 3
Q86	G · 2
Q87	G · 2
Q88	G · 2
Q89	G · 2
Q90	G · 3
Q91	G · 3
Q92	G · 2
Q93	G · 3
Q94	F · 2
Q95	F · 2
Q96	E · 2
Q97	C · 1
Q98	C · 1
Q99	B · 1
Q100	F · 2
Q101	H · 2
Q102	H · 3
Q103	H · 3
Q104	K · 3
Q105	K · 2
Q106	K · 2
Q107	K · 2
Q108	J · 1
Q109	J · 1
Q110	J · 1
Q111	J · 1
Q112	J · 1
Q113	J · 1
Q114	H · 1
Q115	H · 1
Q119	E · 2
Q120	E · 1
Q121	D · 1
Q122	D · 1
Q123	C · 1
Q124	C · 1
Q125	I · 1
Q126	I · 1
Q127	I · 1
Q128	I · 1
Q129	I · 1
Q130	I · 1
Q131	H · 1
Q132	H · 1
Q133	H · 1
Q134	F · 1
Q135	F · 1
Q136	F · 1
Q137	F · 1
Q138	F · 1
Q139	H · 1
Q140	D · 2
Q141	B · 2
Q142	F · 5
RV1	L · 4
RV2	L · 3
RV3	I · 4
RV4	I · 4
RV5	L · 4
RV6	L · 3
RV7	H · 4
RV8	G · 4
RV9	L · 5
RV10	L · 4
RV11	F · 4
RV12	E · 4
RV13	C · 4
RV14	C · 4
RV15	C · 4
RV16	D · 2
RV17	D · 3
RV18	D · 3
RV19	C · 5
RV20	C · 5
RV21	C · 5
RV22	C · 5
RV23	C · 5
RV24	C · 6
RV25	E · 3
RV26	E · 3
RV27	E · 2
RV28	L · 3
RV29	L · 2
RV30	J · 2
RV31	C · 1
RV32	I · 2
RV33	L · 2
RV34	F · 2
RV35	F · 1
TP1	C · 2
TP2	C · 3
TP3	C · 3
TP4	H · 4
TP5	G · 4
TP6	E · 4
TP7	D · 4
TP8	C · 2
TP9	C · 3
TP10	C · 3
TP11	J · 4
TP12	B · 4
TP13	B · 4
TP14	C · 4
TP15	F · 5
TP16	E · 6
TP17	B · 5
TP18	A · 6
TP19	A · 4
TP20	G · 3
TP21	H · 1
TP22	D · 2
TP23	C · 1
TP24	H · 1
TP25	H · 1
TP26	F · 1
TP27	E · 2

VA-28 BOARD
– SOLDERING SIDE –

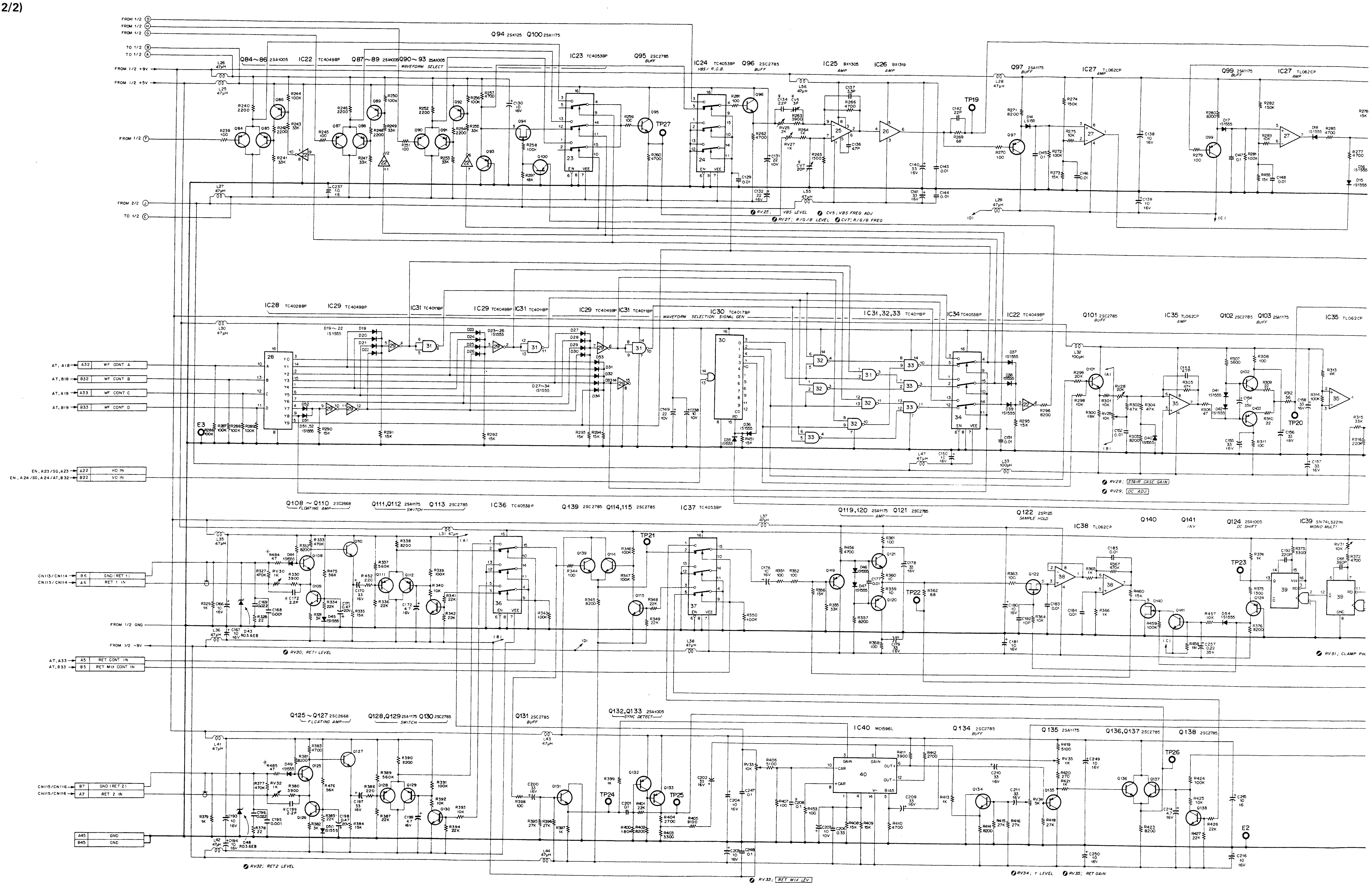
Parts No. 1-615-203-**13**

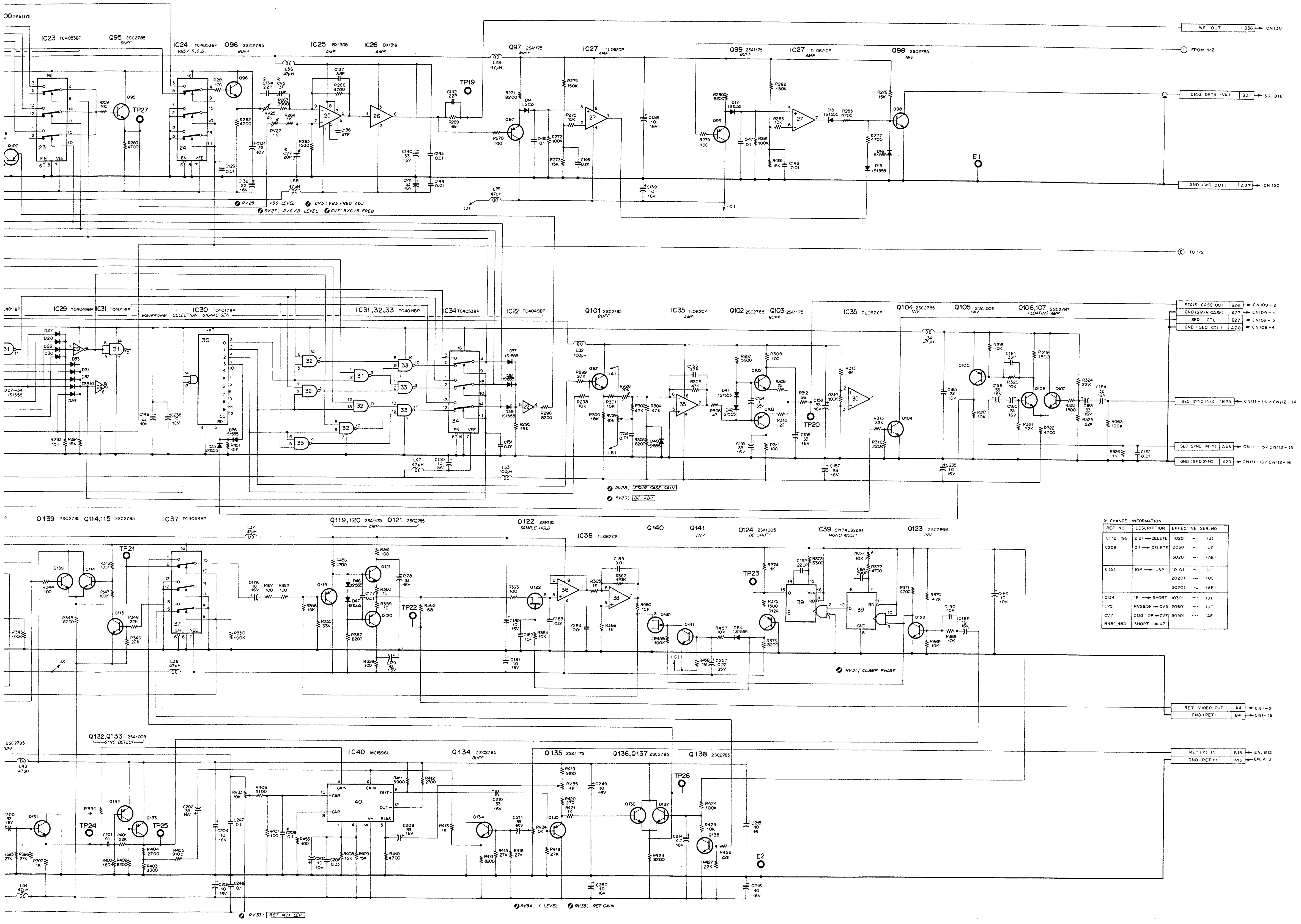


VA-28 BOARD
– SOLDERING SIDE –
1-615-203-13
CCU-360 (UC, J)
CCU-360P (AE)

CN1	A - 1
CV1	L - 4
CV2	L - 5
CV3	L - 5
CV6	B - 5
CV7	E - 3
D1	D - 4
D2	I - 5
D3	I - 5
D4	I - 5
D5	I - 5
D6	I - 5
D7	I - 5
D8	I - 5
D9	I - 5
D10	I - 5
D11	I - 5
D12	I - 5
D13	G - 5
D14	B - 1
D15	B - 1
D16	C - 1
D17	B - 1
D18	B - 1
D19	K - 3
D20	J - 3
D21	K - 3
D22	J - 3
D23	K - 3
D24	K - 3
D25	K - 3
D26	J - 3
D27	J - 3
D28	K - 3
D29	K - 3
D30	J - 3
D31	K - 3
D32	K - 3
D33	J - 3
D34	K - 3
D35	J - 2
D36	J - 2
D37	I - 3
D38	I - 3
D39	I - 3
D40	H - 2
D41	H - 3
D42	H - 3
D43	K - 1
D44	J - 1
D45	J - 1
D46	E - 1
D47	E - 1
D48	I - 1
D49	I - 1
D50	I - 1
D51	K - 3
D52	K - 3
D53	J - 3
D54	C - 2
E1	L - 6
E2	A - 1
E3	K - 2
IC1	B - 3
IC2	C - 3
IC3	K - 4
IC4	I - 4
IC5	K - 5
IC6	G - 4
IC7	K - 5
IC8	E - 4
IC9	E - 4
IC10	B - 4
IC11	C - 4
IC12	C - 4
IC13	I - 5
IC14	H - 5
IC15	H - 5
IC16	F - 5
IC17	J - 5
IC18	D - 5
IC19	B - 5
IC20	B - 5
IC21	E - 5
IC22	F - 2
IC23	F - 3
IC24	E - 3
IC25	E - 3
IC26	D - 3
IC27	B - 1
IC28	K - 3
IC29	J - 3
IC30	J - 2
IC31	J - 2
IC32	I - 2
IC33	I - 2
IC34	I - 3
IC35	H - 3
IC36	H - 1
IC37	E - 1
IC38	D - 1
IC39	C - 1
IC40	G - 1
LV1	D - 4
LV2	E - 5
Q1	B - 2
Q2	B - 3
Q3	B - 3
Q4	C - 2
Q5	C - 3
Q6	C - 3
Q7	I - 4
Q8	I - 4
Q9	I - 4
Q10	I - 4
Q11	I - 4
Q12	I - 4
Q13	I - 4
Q14	I - 4
Q15	I - 4
Q16	I - 4
Q17	H - 4
Q18	H - 4
Q19	H - 4
Q20	H - 4
Q21	G - 4
Q22	G - 4
Q23	G - 4
Q24	G - 4
Q25	G - 4
Q26	G - 4
Q27	F - 4
Q28	F - 4
Q29	F - 4
Q30	F - 4
Q31	E - 4
Q32	E - 4
Q33	F - 4
Q34	E - 4
Q35	E - 4
Q36	F - 4
Q37	D - 4
Q38	D - 4
Q39	D - 4
Q40	D - 4
Q41	D - 4
Q42	D - 2
Q43	D - 2
Q44	D - 3
Q45	D - 3
Q46	D - 3
Q47	D - 3
Q48	J - 4
Q49	J - 4
Q50	I - 5
Q51	I - 5
Q52	I - 5
Q53	H - 5
Q54	H - 5
Q55	H - 5
Q56	G - 5
Q57	G - 5
Q58	G - 5
Q59	G - 5
Q60	G - 5
Q61	F - 5
Q62	G - 6
Q63	G - 6
Q64	F - 5
Q65	F - 5
Q66	F - 5
Q67	E - 5
Q68	E - 5
Q69	E - 5
Q70	G - 3
Q71	G - 3
Q72	G - 2
Q73	D - 5
Q74	D - 5
Q75	C - 5
Q76	C - 5
Q77	D - 5
Q78	B - 5
Q79	B - 5
Q80	B - 5
Q81	C - 6
Q82	D - 5
Q83	D - 5
Q84	G - 3
Q85	G - 3
Q86	G - 2
Q87	G - 2
Q88	G - 2
Q89	G - 2
Q90	G - 3
Q91	G - 3
Q92	G - 2
Q93	G - 3
Q94	F - 2
Q95	F - 2
Q96	E - 2
Q97	C - 1
Q98	C - 1
Q99	B - 1
Q100	F - 2
Q101	H - 2
Q102	H - 3
Q103	H - 3
Q104	K - 3
Q105	K - 2
Q106	K - 2
Q107	K - 2
Q108	J - 1
Q109	J - 1
Q110	J - 1
Q111	J - 1
Q112	J - 1
Q113	J - 1
Q114	H - 1
Q115	H - 1
Q119	E - 2
Q120	E - 1
Q121	D - 1
Q122	D - 1
Q123	C - 1
Q124	C - 1
Q125	I - 1
Q126	I - 1
Q127	I - 1
Q128	I - 1
Q129	I - 1
Q130	I - 1
Q131	H - 1
Q132	H - 1
Q133	H - 1
Q134	F - 1
Q135	F - 1
Q136	F - 1
Q137	F - 1
Q138	F - 1
Q139	H - 1
Q140	D - 2
Q141	B - 2
Q142	F - 5
RV1	L - 4
RV2	L - 3
RV3	I - 4
RV4	I - 4
RV5	L - 4
RV6	L - 3
RV7	H - 4
RV8	G - 4
RV9	L - 5
RV10	L - 4
RV11	F - 4
RV12	E - 4
RV13	C - 4
RV14	C - 4
RV15	C - 4
RV16	D - 2
RV17	D - 3
RV18	D - 3
RV19	C - 5
RV20	C - 5
RV21	C - 5
RV22	C - 5
RV23	C - 5
RV24	C - 6
RV25	E - 3
RV26	E - 3
RV27	E - 2
RV28	L - 3
RV29	L - 2
RV30	J - 2
RV31	C - 1
RV32	I - 2
RV33	L - 2
RV34	F - 2
RV35	F - 1
TP1	C - 2
TP2	C - 3
TP3	C - 3
TP4	H - 4
TP5	G - 4
TP6	E - 4
TP7	D - 4
TP8	C - 2
TP9	C - 3
TP10	C - 3
TP11	J - 4
TP12	B - 4
TP13	B - 4
TP14	C - 4
TP15	F -
TP16	E -
TP17	B - 5
TP18	A - 6
TP19	A - 4
TP20	G - 3
TP21	H - 1
TP22	D - 2
TP23	C - 1
TP24	H - 1
TP25	H - 1
TP26	F - 1
TP27	E - 2

VA-28 BOARD(2/2)


FROM 1/2 +9V
FROM 1/2 +5V
FROM 1/2 F
FROM 2/2 J
TO 1/2 C
Q84~86 2SA1005
IC22 TC4049BP
Q87~89 2SA1005
Q90~93 2SA1005
WAVEFORM SELECT
Q94 2SK125
Q100 2SA1175
IC23 TC4053BP
Q95 2SC2785
BUFF
IC24 TC4053BP
VBS/R.G.B.
Q96 2SC2785
BUFF
IC25 BX1305
AMP
IC26 BX1319
AMP
TP19
TP27
Q97 2SA1175
BUFF
IC27 TL062CP
AMP
Q99 2SA1175
BUFF
RV25; VBS LEVEL
CV5,VBS FREQ ADJ
RV27; R/G/B LEVEL
CV7; R/G/B FREQ
IC28 TC4028BP
IC29 TC4049BP
IC31 TC4011BP
IC30 TC4017BP
WAVEFORM SELECTION SIGNAL GEN
IC31,32,33 TC4011BP
IC34 TC4053BP
IC22 TC4049BP
Q101 2SC2785
BUFF
IC35 TL062CP
AMP
Q102 2SC2785
Q103 2SA1175
BUFF
TP20
AT, A18 A32 WF CONT A
AT, B18 B32 WF CONT B
AT, A19 A33 WF CONT C
AT, B19 B33 WF CONT D
E3
EN, A23/SG, A23 A22 HD IN
EN, A24/SG, A24/AT, B32 B22 VD IN
RV28; STAIR CASE GAIN
RV29; DC ADJ
Q108~Q110 2SC2668
FLOATING AMP
Q111,Q112 2SA1175
SWITCH
Q113 2SC2785
IC36 TC4053BP
Q139 2SC2785
Q114,115 2SC2785
IC37 TC4053BP
Q119,120 2SA1175
Q121 2SC2785
AMP
Q122 2SK125
SAMPLE HOLD
IC38 TL062CP
Q140
Q141
INV
Q124 2SA1005
DC SHIFT
IC39 SN74LS221N
MONO MULTI
TP21
TP22
TP23
CN113/CN114 B6 GND (RET 1)
CN113/CN114 A6 RET 1 IN
FROM 1/2 GND
FROM 1/2 -9V
AT, A33 A5 RET CONT IN
AT, B33 B5 RET MIX CONT IN
RV30; RET1 LEVEL
RV31; CLAMP PH
Q125~Q127 2SC2668
FLOATING AMP
Q128,Q129 2SA1175
Q130 2SC2785
SWITCH
Q131 2SC2785
BUFF
Q132,Q133 2SA1005
SYNC DETECT
IC40 MC1596L
Q134 2SC2785
BUFF
Q135 2SA1175
Q136,Q137 2SC2785
Q138 2SC2785
TP24
TP25
TP26
E2
CN115/CN116 B7 GND (RET 2)
CN115/CN116 A7 RET 2 IN
A45 GND
B45 GND
RV32; RET2 LEVEL
RV33; RET MIX LEV
RV34; Y LEVEL
RV35; RET GAIN


IC23 TC4053BP
Q95 2SC2785 BUFF
IC24 TC4053BP VBS/R.G.B.
Q96 2SC2785 BUFF
IC25 BX1305 AMP
IC26 BX1319 AMP
Q97 2SA1175 BUFF
IC27 TL062CP
Q99 2SA1175 BUFF
IC27 TL062CP AMP
Q98 2SC2785 INV
TP27
TP19
E1
WF OUT B36 CN130
FROM 1/2
DIAG DATA (VA) B37 SG, B18
GND (WF OUT) A37 CN130
TO 1/2
RV25; VBS LEVEL
CV5; VBS FREQ ADJ
RV27; R/G/B LEVEL
CV7; R/G/B FREQ
IC29 TC4049BP
IC31 TC4011BP
IC30 TC4017BP WAVEFORM SELECTION SIGNAL GEN
IC31,32,33 TC4011BP
IC34 TC4053BP
IC22 TC4049BP
Q101 2SC2785 BUFF
IC35 TL062CP AMP
Q102 2SC2785
Q103 2SA1175 BUFF
IC35 TL062CP
Q104 2SC2785 INV
Q105 2SA1005 INV
Q106,107 2SC2787 FLOATING AMP
TP20
STAIR CASE OUT B26 CN109-2
GND (STAIR CASE) A27 CN109-1
SEQ CTL B27 CN109-3
GND (SEQ CTL) A28 CN109-4
SEQ SYNC IN(X) B25 CN111-14 / CN112-14
SEQ SYNC IN(Y) A26 CN111-15 / CN112-15
GND (SEQ SYNC) A25 CN111-16 / CN112-16
RV28; STAIR CASE GAIN
RV29; DC ADJ
Q139 2SC2785
Q114,115 2SC2785
IC37 TC4053BP
Q119,120 2SA1175 AMP
Q121 2SC2785
Q122 2SK125 SAMPLE HOLD
IC38 TL062CP
Q140
Q141 INV
Q124 2SA1005 DC SHIFT
IC39 SN74LS221N MONO MULTI
Q123 2SC2668 INV
TP21
TP22
TP23
RV31; CLAMP PHASE
RET VIDEO OUT A4 CN1-2
GND (RET) B4 CN1-19
Q132,Q133 2SA1005 SYNC DETECT
IC40 MC1596L
Q134 2SC2785 BUFF
Q135 2SA1175
Q136,Q137 2SC2785
Q138 2SC2785
TP24
TP25
TP26
E2
RET(Y) IN B13 EN, B13
GND (RET Y) A13 EN, A13
RV34; Y LEVEL
RV35; RET GAIN
RV33; RET MIX LEV

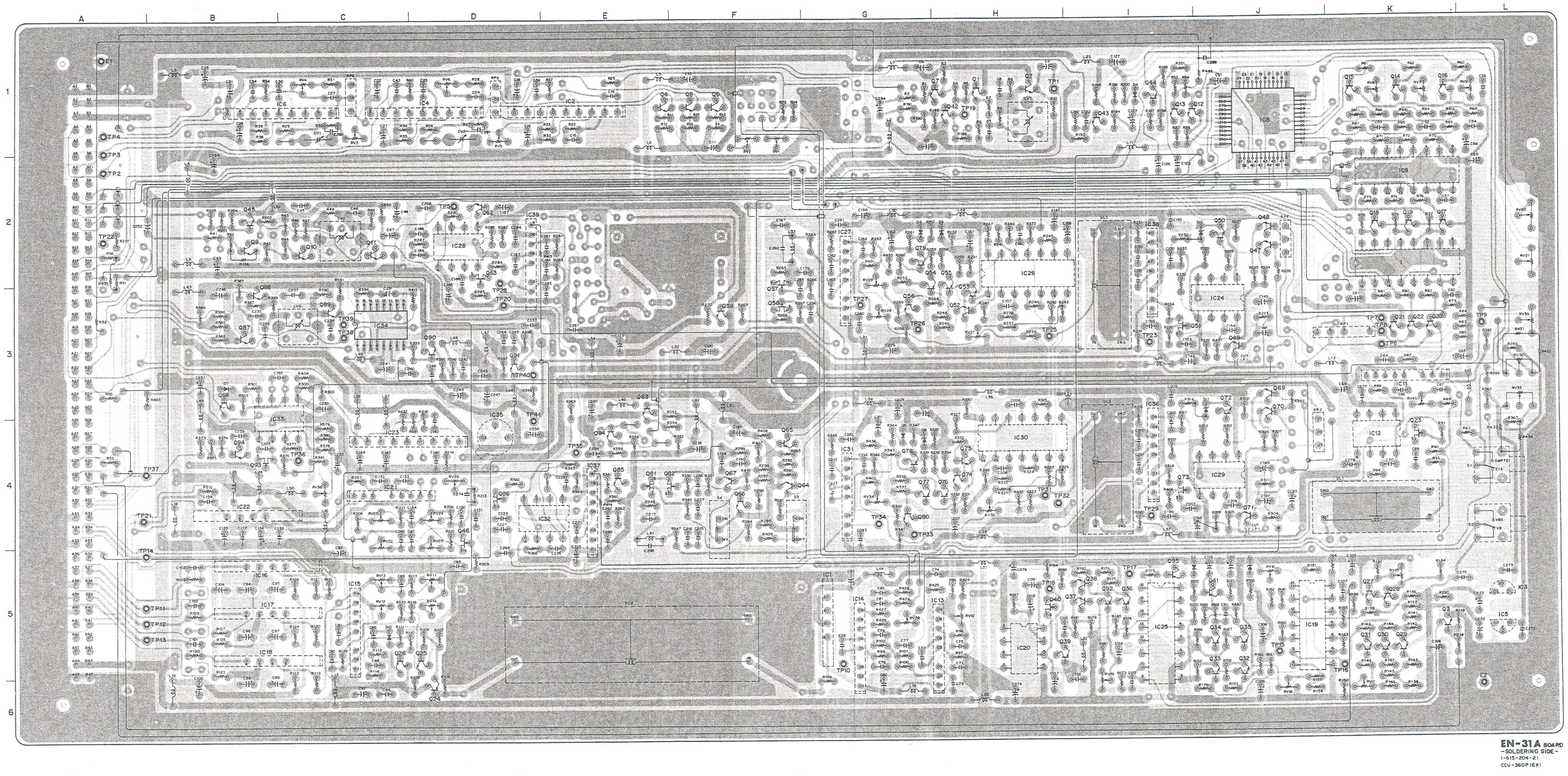
※ CHANGE INFORMATION

REF. NO.	DESCRIPTION	EFFECTIVE SER.NO.
C172, 199 C208	2.2P → DELETE 0.1 → DELETE	10201 ~ (J) 20301 ~ (UC) 30201 ~ (AE)
C133	10P → 1.5P	10101 ~ (J) 20201 ~ (UC) 30201 ~ (AE)
C134 CV5 CV7 R484,485	1P → SHORT RV26.5K → CV5 C133 1.5P → CV7 SHORT → 47	10301 ~ (J) 20601 ~ (UC) 30501 ~ (AE)

VA-28 (2/2)
CCU-360(J)(UC)
CCU-360P(AE)

EN-31/31A BOARD
– SOLDERING SIDE –

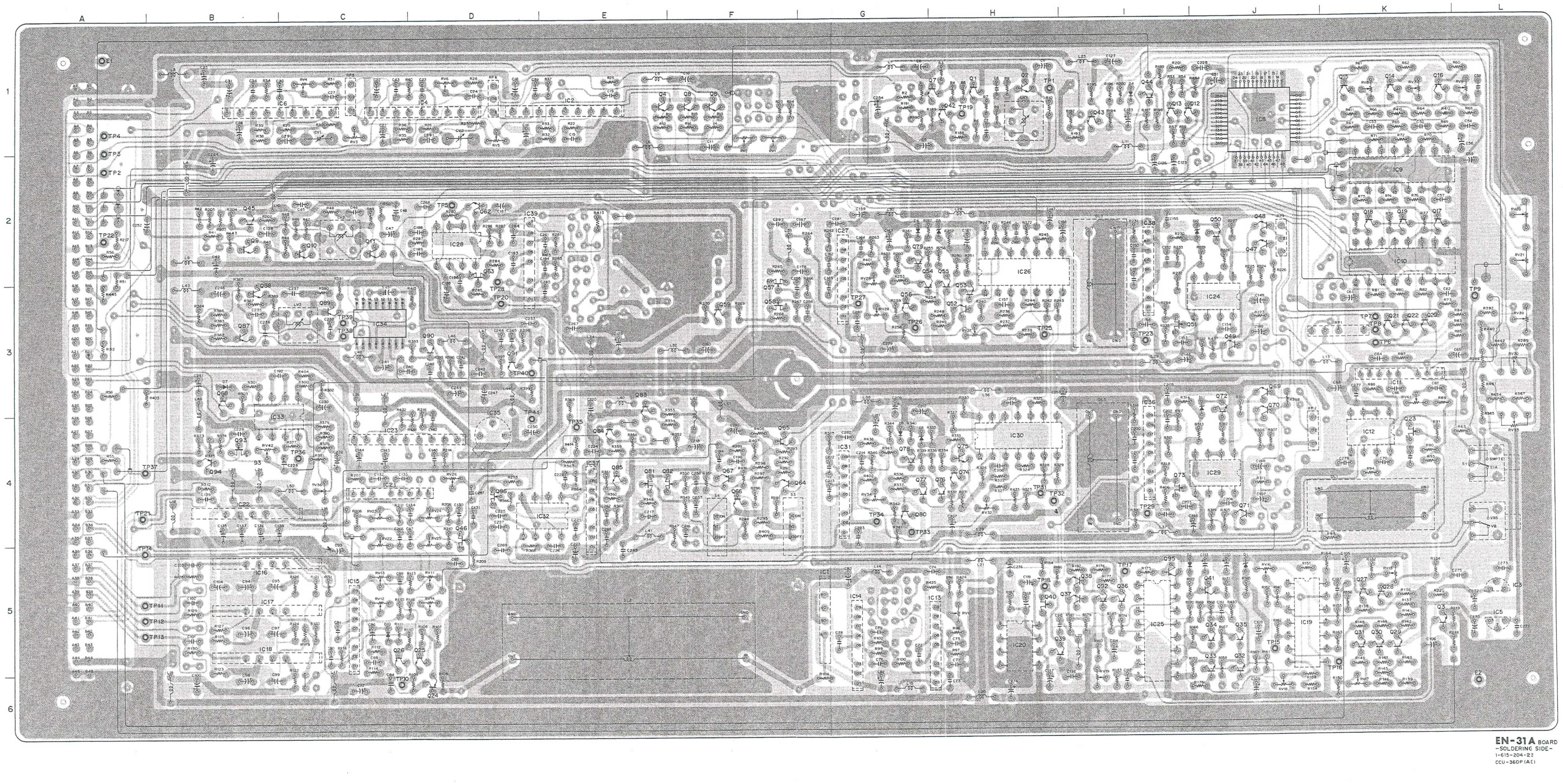
Parts No. 1-615-204-**11** (NTSC)
1-615-204-**21** (PAL)



CV1	C · 1
CV2	D · 1
D1	J · 5
D2	J · 5
D4	I · 1
D5	H · 2
D6	G · 2
D7	B · 3
D8	G · 4
D9	G · 4
D10	C · 5
D11	J · 3
D12	J · 2
DL1	K · 4
DL2	E · 5
DL3	I · 2
DL5	I · 4
E1	A · 1
E2	L · 6
IC1	G · 5
IC2	E · 1
IC3	L · 5
IC4	D · 1
IC5	L · 5
IC6	B · 1
IC8	J · 1
IC9	K · 2
IC10	K · 2
IC11	K · 3
IC12	K · 4
IC13	H · 5
IC14	G · 5
IC15	C · 5
IC16	B · 5
IC17	B · 5
IC18	B · 5
IC19	J · 5
IC20	H · 5
IC21	C · 4
IC22	B · 4
IC23	C · 4
IC24	J · 3
IC25	I · 5
IC26	H · 2
IC27	G · 2
IC28	D · 2
IC29	J · 4
IC30	H · 4
IC31	G · 4
IC32	E · 4
IC33	C · 3
IC34	C · 3
IC35	D · 4
IC36	I · 4
IC37	E · 4
IC38	I · 2
LV1	H · 1
LV2	C · 2
LV3	C · 3
Q1	H · 1
Q2	H · 1
Q3	K · 5
Q4	E · 1
Q6	F · 1
Q7	H · 1
Q8	F · 1
Q9	B · 2
Q10	C · 2
Q11	C · 2
Q12	J · 1
Q13	I · 1
Q14	K · 1
Q15	K · 1
Q16	K · 1
Q17	K · 2
Q18	K · 2
Q19	K · 2
Q20	K · 3
Q21	K · 3
Q22	K · 3
Q23	K · 4
Q24	D · 6
Q25	D · 5
Q26	C · 5
Q27	K · 5
Q28	C · 5
Q28	K · 5
Q29	K · 5
Q30	K · 5
Q31	K · 5
Q32	J · 5
Q33	J · 5
Q34	J · 5
Q35	J · 5
Q36	I · 5
Q37	I · 5
Q38	I · 5
Q39	H · 5
Q40	H · 5
Q41	J · 5
Q42	H · 1
Q43	I · 1
Q44	I · 1
Q45	B · 2
Q46	D · 4
Q47	J · 2
Q48	J · 2
Q49	J · 3
Q50	J · 2
Q51	I · 3
Q52	H · 3
Q53	H · 2
Q54	G · 2
Q55	H · 3
Q56	G · 3
Q57	F · 3
Q58	F · 3
Q59	F · 3
Q62	D · 2
Q63	D · 2
Q64	F · 4
Q65	F · 4
Q66	F · 4
Q67	F · 4
Q68	B · 3
Q69	J · 3
Q70	J · 3
Q71	J · 4
Q72	J · 3
Q73	I · 4
Q74	H · 4
Q75	H · 4
Q76	H · 4
Q77	G · 4
Q78	G · 4
Q79	G · 2
Q80	G · 4
Q81	E · 4
Q82	F · 4
Q83	E · 3
Q84	E · 4
Q85	E · 4
Q86	D · 4
Q87	B · 3
Q88	B · 3
Q89	C · 3
Q90	D · 3
Q91	D · 3
Q92	I · 5
Q93	B · 4
Q94	B · 4
Q95	I · 5
RP1	K · 3
RP3	J · 4
RP4	J · 2
RP5	C · 1
RP6	D · 1
RV1	F · 1
RV2	F · 1
RV3	C · 1
RV4	C · 1
RV5	D · 1
RV6	D · 1
RV7	K · 1
RV8	K · 1
RV9	L · 1
RV10	H · 5
RV11	D · 5
RV12	C · 5
RV13	C · 5
RV14	D · 5
RV15	K · 5
RV16	J · 5
RV17	K · 6
RV18	J · 6
RV19	I · 6
RV20	L · 2
RV21	L · 2
RV22	C · 4
RV23	C · 4
RV24	D · 4
RV25	D · 4
RV26	D · 4
RV27	H · 3
RV28	G · 3
RV29	G · 3
RV30	L · 3
RV32	H · 4
RV34	G · 4
RV35	L · 3
RV37	K · 2
RV38	G · 5
RV39	L · 3
RV40	G · 1
RV41	K · 3
S1	L · 4
S2	L · 4
S3	F · 4
S4	F · 4
TP1	H · 1
TP2	A · 2
TP3	A · 1
TP4	A · 1
TP5	D · 2
TP6	K · 3
TP7	K · 3
TP8	K · 3
TP9	L · 3
TP10	G · 5
TP11	A · 5
TP12	A · 5
TP13	A · 5
TP14	A · 5
TP15	J · 5
TP16	K · 5
TP17	I · 5
TP18	H · 5
TP19	H · 1
TP20	D · 3
TP21	A · 4
TP22	A · 2
TP23	I · 3
TP25	H · 3
TP26	G · 3
TP27	G · 3
TP28	D · 2
TP29	I · 4
TP31	H · 4
TP32	H · 4
TP33	G · 4
TP34	G · 4
TP35	E · 4
TP36	C · 4
TP37	A · 4
TP38	C · 3
TP39	C · 3
TP40	D · 3
TP41	D · 4

EN-31/31A BOARD
– SOLDERING SIDE –

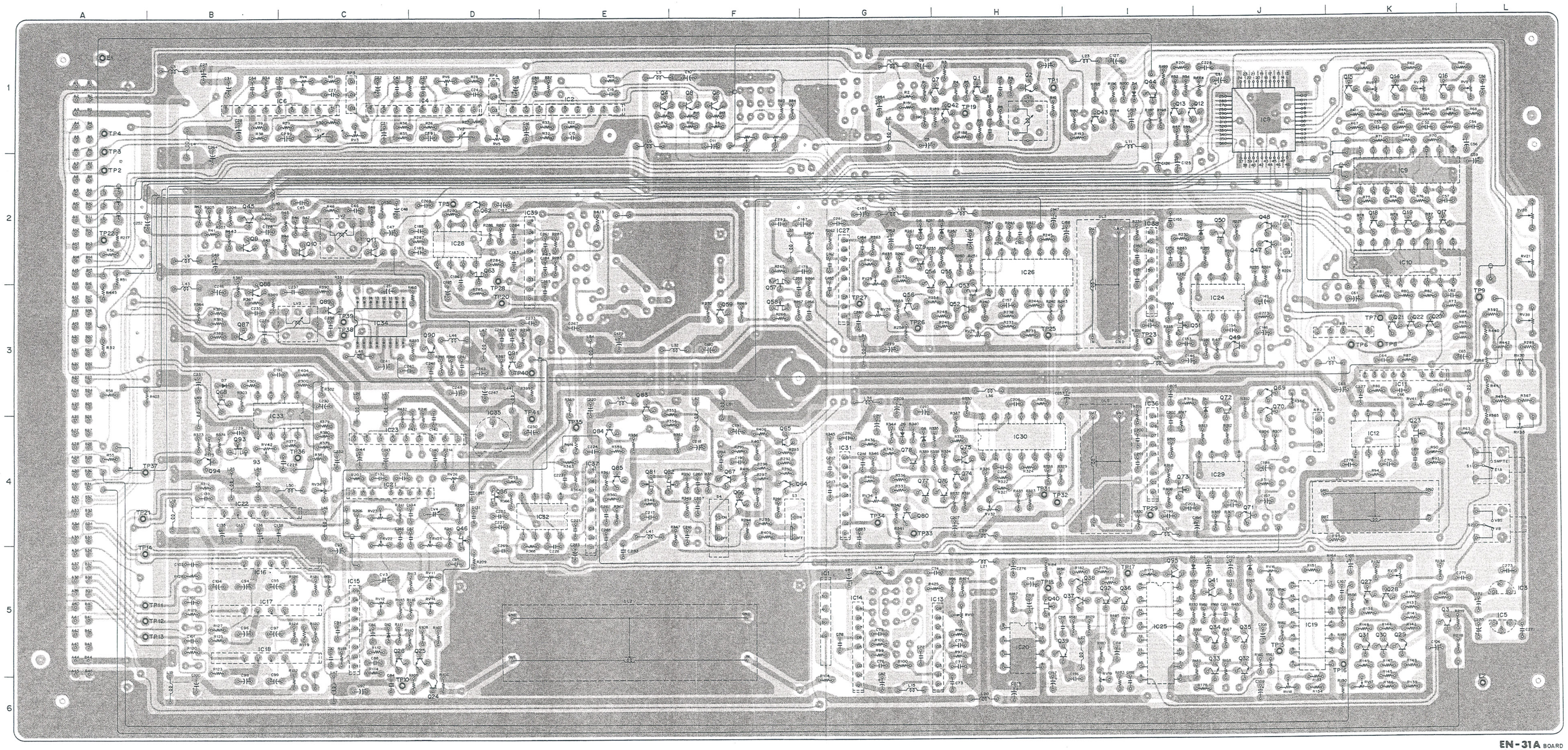
Parts No. 1-615-204-**12** (NTSC)
1-615-204-**22** (PAL)



CV1	C · 1
CV2	D · 1
D1	J · 5
D2	J · 5
D4	I · 1
D5	H · 2
D6	G · 2
D7	B · 3
D8	G · 4
D9	G · 4
D10	C · 5
D11	J · 3
D12	J · 2
DL1	K · 4
DL2	E · 5
DL3	I · 2
DL5	I · 4
E1	A · 1
E2	L · 6
IC1	G · 5
IC2	E · 1
IC3	L · 5
IC4	D · 1
IC5	L · 5
IC6	B · 1
IC8	J · 1
IC9	K · 2
IC10	K · 2
IC11	K · 3
IC12	K · 4
IC13	H · 5
IC14	G · 5
IC15	C · 5
IC16	B · 5
IC17	B · 5
IC18	B · 5
IC19	J · 5
IC20	H · 5
IC21	C · 4
IC22	B · 4
IC23	C · 4
IC24	J · 3
IC25	I · 5
IC26	H · 2
IC27	G · 2
IC28	D · 2
IC29	J · 4
IC30	H · 4
IC31	G · 4
IC32	E · 4
IC33	C · 3
IC34	C · 3
IC35	D · 4
IC36	I · 4
IC37	E · 4
IC38	I · 2
LV1	H · 1
LV2	C · 2
LV3	C · 3
Q1	H · 1
Q2	H · 1
Q3	K · 5
Q4	E · 1
Q6	F · 1
Q7	H · 1
Q8	F · 1
Q9	B · 2
Q10	C · 2
Q11	C · 2
Q12	J · 1
Q13	I · 1
Q14	K · 1
Q15	K · 1
Q16	K · 1
Q17	K · 2
Q18	K · 2
Q19	K · 2
Q20	K · 3
Q21	K · 3
Q22	K · 3
Q23	K · 4
Q24	D · 6
Q25	D · 5
Q26	C · 5
Q27	K · 5
Q28	C · 5
Q28	K · 5
Q29	K · 5
Q30	K · 5
Q31	K · 5
Q32	J · 5
Q33	J · 5
Q34	J · 5
Q35	J · 5
Q36	I · 5
Q37	I · 5
Q38	I · 5
Q39	H · 5
Q40	H · 5
Q41	J · 5
Q42	H · 1
Q43	I · 1
Q44	I · 1
Q45	B · 2
Q46	D · 4
Q47	J · 2
Q48	J · 2
Q49	J · 3
Q50	J · 2
Q51	I · 3
Q52	H · 3
Q53	H · 2
Q54	G · 2
Q55	H · 3
Q56	G · 3
Q57	F · 3
Q58	F · 3
Q59	F · 3
Q62	D · 2
Q63	D · 2
Q64	F · 4
Q65	F · 4
Q66	F · 4
Q67	F · 4
Q68	B · 3
Q69	J · 3
Q70	J · 3
Q71	J · 4
Q72	J · 3
Q73	I · 4
Q74	H · 4
Q75	H · 4
Q76	H · 4
Q77	G · 4
Q78	G · 4
Q79	G · 2
Q80	G · 4
Q81	E · 4
Q82	F · 4
Q83	E · 3
Q84	E · 4
Q85	E · 4
Q86	D · 4
Q87	B · 3
Q88	B · 3
Q89	C · 3
Q90	D · 3
Q91	D · 3
Q92	I · 5
Q93	B · 4
Q94	B · 4
Q95	I · 5
RP1	K · 3
RP3	J · 4
RP4	J · 2
RP5	C · 1
RP6	D · 1
RV1	F · 1
RV2	F · 1
RV3	C · 1
RV4	C · 1
RV5	D · 1
RV6	D · 1
RV7	K · 1
RV8	K · 1
RV9	L · 1
RV10	H · 5
RV11	D · 5
RV12	C · 5
RV13	C · 5
RV14	D · 5
RV15	K · 5
RV16	J · 5
RV17	K · 6
RV18	J · 6
RV19	I · 6
RV20	L · 2
RV21	L · 2
RV22	C · 4
RV23	C · 4
RV24	D · 4
RV25	D · 4
RV26	D · 4
RV27	H · 3
RV28	G · 3
RV29	G · 3
RV30	L · 3
RV32	H · 4
RV34	G · 4
RV35	L · 4
RV37	K · 2
RV38	G · 5
RV39	L · 3
RV40	G · 1
RV41	K · 3
RV42	B · 4
S1	L · 4
S2	L · 4
S3	F · 4
S4	F · 4
TP1	H · 1
TP2	A · 2
TP3	A · 1
TP4	A · 1
TP5	D · 2
TP6	K · 3
TP7	K · 3
TP8	K · 3
TP9	L · 3
TP10	C · 6
TP11	A · 5
TP12	A · 5
TP13	A · 5
TP14	A · 5
TP15	J · 5
TP16	K · 5
TP17	I · 5
TP18	H · 5
TP19	H · 1
TP20	D · 3
TP21	A · 4
TP22	A · 2
TP23	I · 3
TP25	H · 3
TP26	G · 3
TP27	G · 3
TP28	D · 2
TP29	I · 4
TP31	H · 4
TP32	H · 4
TP33	G · 4
TP34	G · 4
TP35	E · 4
TP36	C · 4
TP37	A · 4
TP38	C · 3
TP39	C · 3
TP40	D · 3
TP41	D · 4

EN-31/31A BOARD
– SOLDERING SIDE –

Parts No. 1-615-204-**13** (NTSC)
1-615-204-**23** (PAL)

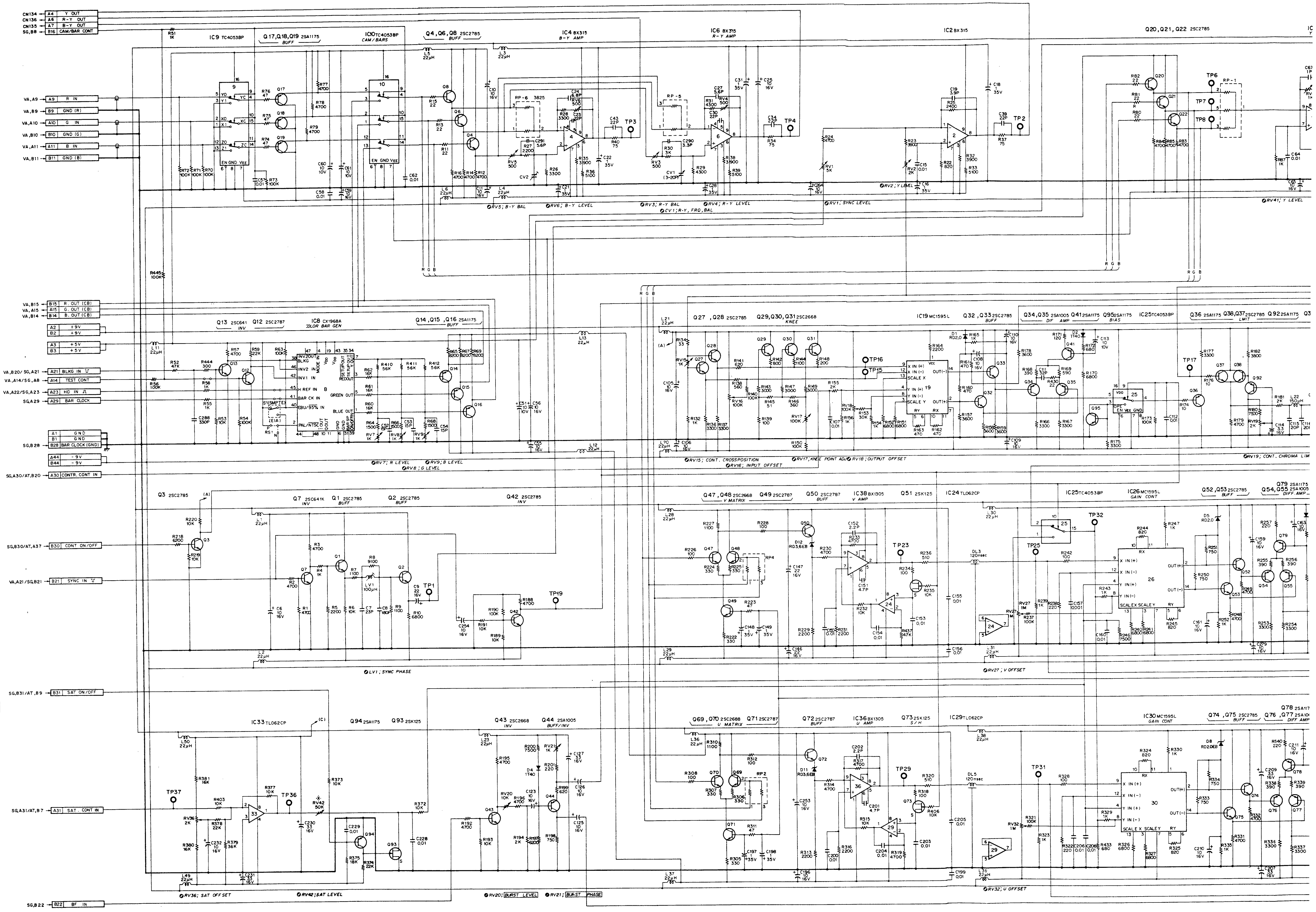


EN-31A BOARD
-SOLDERING SIDE-
1-615-204-23
CCU-360P(AE)

CV1	C · 1
CV2	D · 1
D1	J · 5
D2	J · 5
D4	I · 1
D5	H · 2
D6	G · 2
D7	B · 3
D8	G · 4
D9	G · 4
D10	C · 5
D11	J · 3
D12	J · 2
DL1	K · 4
DL2	E · 5
DL3	I · 2
DL5	I · 4
E1	A · 1
E2	L · 6
IC1	G · 5
IC2	E · 1
IC3	L · 5
IC4	D · 1
IC5	L · 5
IC6	B · 1
IC8	J · 1
IC9	K · 2
IC10	K · 2
IC11	K · 3
IC12	K · 4
IC13	H · 5
IC14	G · 5
IC15	C · 5
IC16	B · 5
IC17	B · 5
IC18	B · 5
IC19	J · 5
IC20	H · 5
IC21	C · 4
IC22	B · 4
IC23	C · 4
IC24	J · 3
IC25	I · 5
IC26	H · 2
IC27	G · 2
IC28	D · 2
IC29	J · 4
IC30	H · 4
IC31	G · 4
IC32	E · 4
IC33	C · 3
IC34	C · 3
IC35	D · 4
IC36	I · 4
IC37	E · 4
IC38	I · 2
LV1	H · 1
LV2	C · 2
LV3	C · 3
Q1	H · 1
Q2	H · 1
Q3	K · 5
Q4	E · 1
Q6	F · 1
Q7	H · 1
Q8	F · 1
Q9	B · 2
Q10	C · 2
Q11	C · 2
Q12	J · 1
Q13	I · 1
Q14	K · 1
Q15	K · 1
Q16	K · 1
Q17	K · 2
Q18	K · 2
Q19	K · 2
Q20	K · 3
Q21	K · 3
Q22	K · 3
Q23	K · 4
Q24	D · 6
Q25	D · 5
Q26	C · 5
Q27	K · 5
Q28	C · 5
Q28	K · 5
Q29	K · 5
Q30	K · 5
Q31	K · 5
Q32	J · 5
Q33	J · 5
Q34	J · 5
Q35	J · 5
Q36	I · 5
Q37	I · 5
Q38	I · 5
Q39	H · 5
Q40	H · 5
Q41	J · 5
Q42	H · 1
Q43	I · 1
Q44	I · 1
Q45	B · 2
Q46	D · 4
Q47	J · 2
Q48	J · 2
Q49	J · 3
Q50	J · 2
Q51	I · 3
Q52	H · 3
Q53	H · 2
Q54	G · 2
Q55	H · 3
Q56	G · 3
Q57	F · 3
Q58	F · 3
Q59	F · 3
Q62	D · 2
Q63	D · 2
Q64	F · 4
Q65	F · 4
Q66	F · 4
Q67	F · 4
Q68	B · 3
Q69	J · 3
Q70	J · 3
Q71	J · 4
Q72	J · 3
Q73	I · 4
Q74	H · 4
Q75	H · 4
Q76	H · 4
Q77	G · 4
Q78	G · 4
Q79	G · 2
Q80	G · 4
Q81	E · 4
Q82	F · 4
Q83	E · 3
Q84	E · 4
Q85	E · 4
Q86	D · 4
Q87	B · 3
Q88	B · 3
Q89	C · 3
Q90	D · 3
Q91	D · 3
Q92	I · 5
Q93	B · 4
Q94	B · 4
Q95	I · 5
RP1	K · 3
RP3	J · 4
RP4	J · 2
RP5	C · 1
RP6	D · 1
RV1	F · 1
RV2	F · 1
RV3	C · 1
RV4	C · 1
RV5	D · 1
RV6	D · 1
RV7	K · 1
RV8	K · 1
RV9	L · 1
RV10	H · 5
RV11	D · 5
RV12	C · 5
RV13	C · 5
RV14	D · 5
RV15	K · 5
RV16	J · 5
RV17	K · 6
RV18	J · 6
RV19	I · 6
RV20	L · 2
RV21	L · 2
RV22	C · 4
RV23	C · 4
RV24	D · 4
RV25	D · 4
RV26	D · 4
RV27	H · 3
RV28	G · 3
RV29	G · 3
RV30	L · 3
RV32	H · 4
RV34	G · 4
RV35	L · 4
RV37	K · 2
RV38	G · 5
RV39	L · 3
RV40	G · 1
RV41	K · 3
RV42	B · 4
S1	L · 4
S2	L · 4
S3	F · 4
S4	F · 4
TP1	H · 1
TP2	A · 2
TP3	A · 1
TP4	A · 1
TP5	D · 2
TP6	K · 3
TP7	K · 3
TP8	K · 3
TP9	L · 3
TP10	C · 6
TP11	A · 5
TP12	A · 5
TP13	A · 5
TP14	A · 5
TP15	J · 5
TP16	K · 5
TP17	I · 5
TP18	H · 5
TP19	H · 1
TP20	D · 3
TP21	A · 4
TP22	A · 2
TP23	I · 3
TP25	H · 3
TP26	G · 3
TP27	G · 3
TP28	D · 2
TP29	I · 4
TP31	H · 4
TP32	H · 4
TP33	G · 4
TP34	G · 4
TP35	E · 4
TP36	C · 4
TP37	A · 4
TP38	C · 3
TP39	C · 3
TP40	D · 3
TP41	D · 4

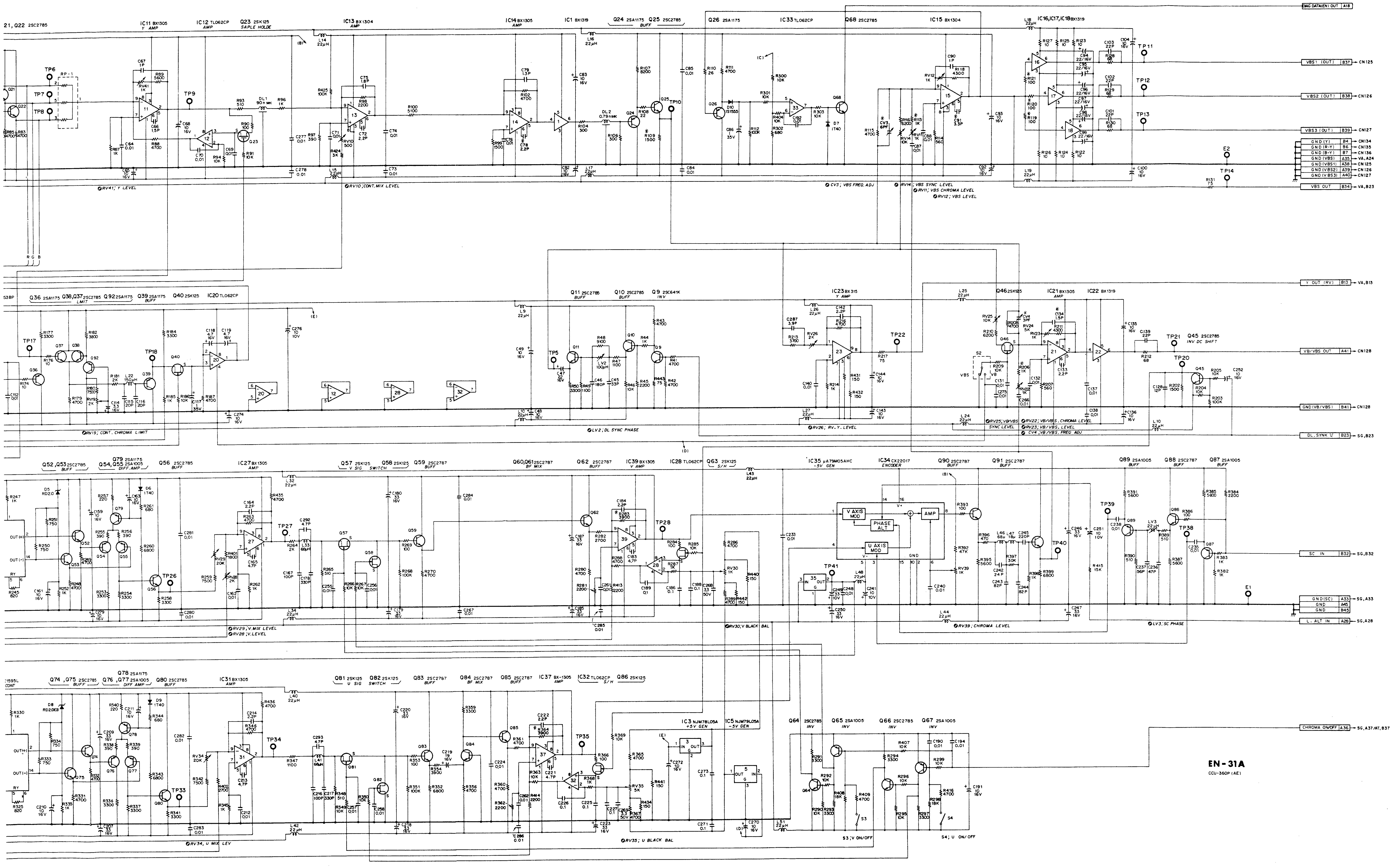
EN-31/31A

EN-31/31A BOARD

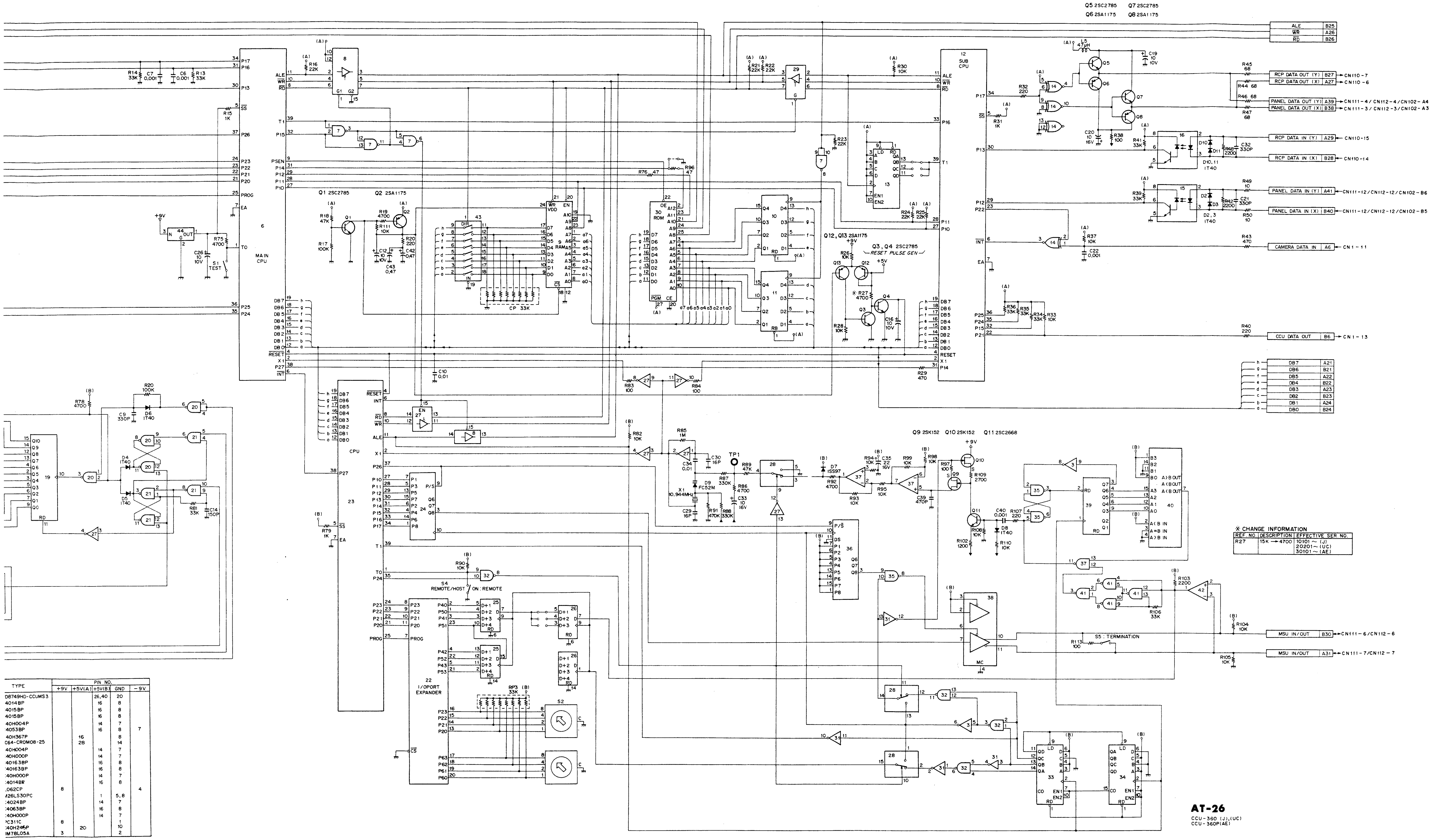

CN134 A4 Y OUT
CN136 A6 R-Y OUT
CN135 A7 B-Y OUT
SG,B8 B16 CAM/BAR CONT
IC9 TC4053BP
Q17,Q18,Q19 2SA1175 BUFF
IC10 TC4053BP CAM/BARS
Q4,Q6,Q8 2SC2785 BUFF
IC4 BX315 B-Y AMP
IC6 BX315 R-Y AMP
IC2 BX315
Q20,Q21,Q22 2SC2785
VA,A9 A9 R IN
VA,B9 B9 GND (R)
VA,A10 A10 G IN
VA,B10 B10 GND (G)
VA,A11 A11 B IN
VA,B11 B11 GND (B)
TP3
TP4
TP2
TP6
TP7
TP8
RP-6
RP-5
RP-1
RV5; B-Y BAL
RV6; B-Y LEVEL
RV3; R-Y BAL
RV4; R-Y LEVEL
CV1; R-Y, FRQ, BAL
RV1; SYNC LEVEL
RV2; Y LEVEL
RV41; Y LEVEL
VA,B15 B15 R. OUT (CB)
VA,A15 A15 G. OUT (CB)
VA,B14 B14 B. OUT (CB)
A2 +9V
B2 +9V
A3 +5V
B3 +5V
VA,B20/SG,A21 A21 BLKG IN
VA,A14/SG,A8 A14 TEST CONT
VA,A22/SG,A23 A23 HD IN
SG,A29 A29 BAR CLOCK
A1 GND
B1 GND
SG,B28 B28 BAR CLOCK (GND)
A44 -9V
B44 -9V
SG,A30/AT,B20 A30 CONTR. CONT IN
Q13 2SC641 INV
Q12 2SC2787
IC8 CX1968A COLOR BAR GEN
Q14,Q15,Q16 2SA1175 BUFF
RV7; R LEVEL
RV8; G LEVEL
RV9; B LEVEL
Q27,Q28 2SC2785
Q29,Q30,Q31 2SC2668 KNEE
IC19 MC1595L
Q32,Q33 2SC2785 BUFF
Q34,Q35 2SA1005 DIF AMP
Q41 2SA1175
Q95 2SA1175 BIAS
IC25 TC4053BP
Q36 2SA1175
Q38,Q37 2SC2785
Q92 2SA1175
TP16
TP15
TP17
RV15; CONT. CROSSPOSITION
RV16; INPUT OFFSET
RV17; KNEE POINT ADJ
RV18; OUTPUT OFFSET
RV19; CONT. CHROMA LIM
Q3 2SC2785
Q7 2SC641K INV
Q1 2SC2785 BUFF
Q2 2SC2785 BUFF
Q42 2SC2785 INV
SG,B30/AT,A37 B30 CONT ON/OFF
VA,A21/SG,B21 B21 SYNC IN
TP1
TP19
LV1; SYNC PHASE
Q47,Q48 2SC2668 V MATRIX
Q49 2SC2787
Q50 2SC2787 BUFF
IC38 BX1305 V AMP
Q51 2SK125
IC24 TL062CP
IC25 TC4053BP
IC26 MC1595L GAIN CONT
Q52,Q53 2SC2785 BUFF
Q79 2SA1175
Q54,Q55 2SA1005 DIFF AMP
TP23
TP25
TP32
RV27; V OFFSET
SG,B31/AT,B9 B31 SAT ON/OFF
IC33 TL062CP
Q94 2SA1175
Q93 2SK125
Q43 2SC2668 INV
Q44 2SA1005 BUFF/INV
SG,A31/AT,B7 A31 SAT. CONT IN
TP37
TP36
RV36; SAT OFFSET
RV42; SAT LEVEL
RV20; BURST LEVEL
RV21; BURST PHASE
Q69,Q70 2SC2668 U MATRIX
Q71 2SC2787
Q72 2SC2787 BUFF
IC36 BX1305 U AMP
Q73 2SK125 S/H
IC29 TL062CP
IC30 MC1595L GAIN CONT
Q74,Q75 2SC2785 BUFF
Q76,Q77 2SA1005 DIFF AMP
Q78 2SA1175
TP29
TP31
RV32; U OFFSET
SG,B22 B22 BF IN

※ CHANGE INFORMATION

REF NO.	DESCRIPTION	EFFECTIVE SER. NO.
RV42	R376, 22K — RV42	30201
C78	4.7P → 2.2P	30501
CV3	RV13.5K C89.1P } → CV3	
CV4	RV24.5K C130.1P } → CV4	
C134	2.2P → 1.5P	
R157	3600 → DELETE	30301
R160	470 → 430	
R178	3600 → 10K	
R109	4700 → 1500	
R119 R120 R121	} 33 → 100	
C91	2.2 → 1.5P	
R113 R206	} 470 → 1K	
R283 R364	} 2400 → 3900	


IC11 BX1305 Y AMP
IC12 TL062CP AMP
Q23 2SK125 SAPLE HOLDE
IC13 BX1304 AMP
IC14 BX1305 AMP
IC1 BX1319
Q24 2SA1175 Q25 2SC2785 BUFF
Q26 2SA1175
IC33 TL062CP
Q68 2SC2785
IC15 BX1304
IC16,IC17,IC18 BX1319
DAG DATA(EN) OUT A18
VBS1 (OUT) B37 CN125
VBS2 (OUT) B38 CN126
VBS3 (OUT) B39 CN127
GND (Y) B4 CN134
GND (R-Y) B6 CN135
GND (B-Y) B7 CN136
GND (VBS) A35 VA,A24
GND (VBS1) A38 CN125
GND (VBS2) A39 CN126
GND (VBS3) A40 CN127
VBS OUT B34 VA,B23
RV41; Y LEVEL
RV10; CONT. MIX LEVEL
CV3; VBS FREQ. ADJ
RV14; VBS SYNC LEVEL
RV11; VBS CHROMA LEVEL
RV12; VBS LEVEL
Q36 2SA1175 Q38,Q37 2SC2785 Q92 2SA1175 LIMIT
Q39 2SA1175 BUFF
Q40 2SK125
IC20 TL062CP
RV15; CONT. CHROMA LIMIT
Q11 2SC2785 BUFF
Q10 2SC2785 BUFF
Q9 2SC641K INV
LV2; DL SYNC PHASE
IC23 BX315 Y AMP
RV26; RV. Y. LEVEL
Q46 2SK125
IC21 BX1305 AMP
IC22 BX1319
Q45 2SC2785 INV DC SHIFT
Y OUT (RV) B13 VA,B13
VB/VBS OUT A41 CN128
GND (VB/VBS) B41 CN128
DL. SYNK 'U' B23 SG,B23
RV25; VB/VBS SYNC LEVEL
RV22; VB/VBS. CHROMA LEVEL
RV23; VB/VBS. LEVEL
CV4 ; VB/VBS. FREQ ADJ
Q52,Q53 2SC2785 BUFF
Q79 2SA1175 Q54,Q55 2SA1005 DIFF. AMP
Q56 2SC2785
IC27 BX1305 AMP
Q57 2SK125 V SIG
Q58 2SK125 SWITCH
Q59 2SC2787
Q60,Q61 2SC2787 BF MIX
Q62 2SC2787 BUFF
IC39 BX1305 V AMP
IC28 TL062CP
Q63 2SK125 S/H
IC35 μA79M05AHC -5V GEN
IC34 CX22017 ENCODER
Q90 2SC2787 BUFF
Q91 2SC2787 BUFF
Q89 2SA1005 BUFF
Q88 2SC2787 BUFF
Q87 2SA1005 BUFF
V AXIS MOD
PHASE ALT
U AXIS MOD
AMP
SC IN B32 SG,B32
GND (SC) A33 SG,A33
GND A45
GND B45
L. ALT IN A26 SG,A26
RV29; V. MIX LEVEL
RV28; V. LEVEL
RV30; V BLACK BAL
RV39; CHROMA LEVEL
LV3; SC PHASE
Q74,Q75 2SC2785 BUFF
Q78 2SA1175 Q76,Q77 2SA1005 DIFF AMP
Q80 2SC2785 BUFF
IC31 BX1305 AMP
Q81 2SK125 U SIG
Q82 2SK125 SWITCH
Q83 2SC2787 BUFF
Q84 2SC2787 BF MIX
Q85 2SC2787 BUFF
IC37 BX-1305 AMP
IC32 TL062CP S/H
Q86 2SK125
IC3 NJM78L05A +5V GEN
IC5 NJM79L05A -5V GEN
Q64 2SC2785 INV
Q65 2SA1005 INV
Q66 2SC2785 INV
Q67 2SA1005 INV
CHROMA ON/OFF A36 SG,A37/A7,B37
S3; V ON/OFF
S4; U ON/OFF
RV34; U MIX LEV
RV35; U BLACK BAL
EN-31A
CCU-360P (AE)

AT-26 AT-26


MAIN CPU
SUB CPU
CPU
ROM
RAM
I/OPORT EXPANDER
CP 33K
RP3 33K
S1 TEST
S2
S4 REMOTE/HOST ON: REMOTE
S5 : TERMINATION
TP1
X1 10.944MHz
Q1 2SC2785
Q2 2SA1175
Q3, Q4 2SC2785
Q5 2SC2785
Q6 2SA1175
Q7 2SC2785
Q8 2SA1175
Q9 2SK152
Q10 2SK152
Q11 2SC2668
Q12, Q13 2SA1175
RESET PULSE GEN
ALE B25
WR A26
RD B26
RCP DATA OUT (Y) B27 CN110-7
RCP DATA OUT (X) A27 CN110-6
PANEL DATA OUT (Y) A39 CN111-4/CN112-4/CN102-A4
PANEL DATA OUT (X) B38 CN111-3/CN112-3/CN102-A3
RCP DATA IN (Y) A29 CN110-15
RCP DATA IN (X) B28 CN110-14
PANEL DATA IN (Y) A41 CN111-12/CN112-12/CN102-B6
PANEL DATA IN (X) B40 CN111-12/CN112-12/CN102-B5
CAMERA DATA IN A6 CN1-11
CCU DATA OUT B6 CN1-13
DB7 A21
DB6 B21
DB5 A22
DB4 B22
DB3 A23
DB2 B23
DB1 A24
DB0 B24
MSU IN/OUT B30 CN111-6/CN112-6
MSU IN/OUT A31 CN111-7/CN112-7
MC

TYPE	PIN NO.				
	+9V	+5V(A)	+5V(B)	GND	−9V
D8749HD-CCUMS3			26,40	20	
4014BP			16	8	
4015BP			16	8	
4015BP			16	8	
40H004P			14	7	
4053BP			16	8	7
40H367P		16		8	
C64-CROM08-25		28		14	
40H004P			14	7	
40H000P			14	7	
40163BP			16	8	
40163BP			16	8	
40H000P			14	7	
4014BP			16	8	
062CP	8				4
126LS30PC			1	5, 8	
4024BP			14	7	
4063BP			16	8	
40H000P			14	7	
C311C	8			1	
40H245P		20		10	
M78L05A	3			2	

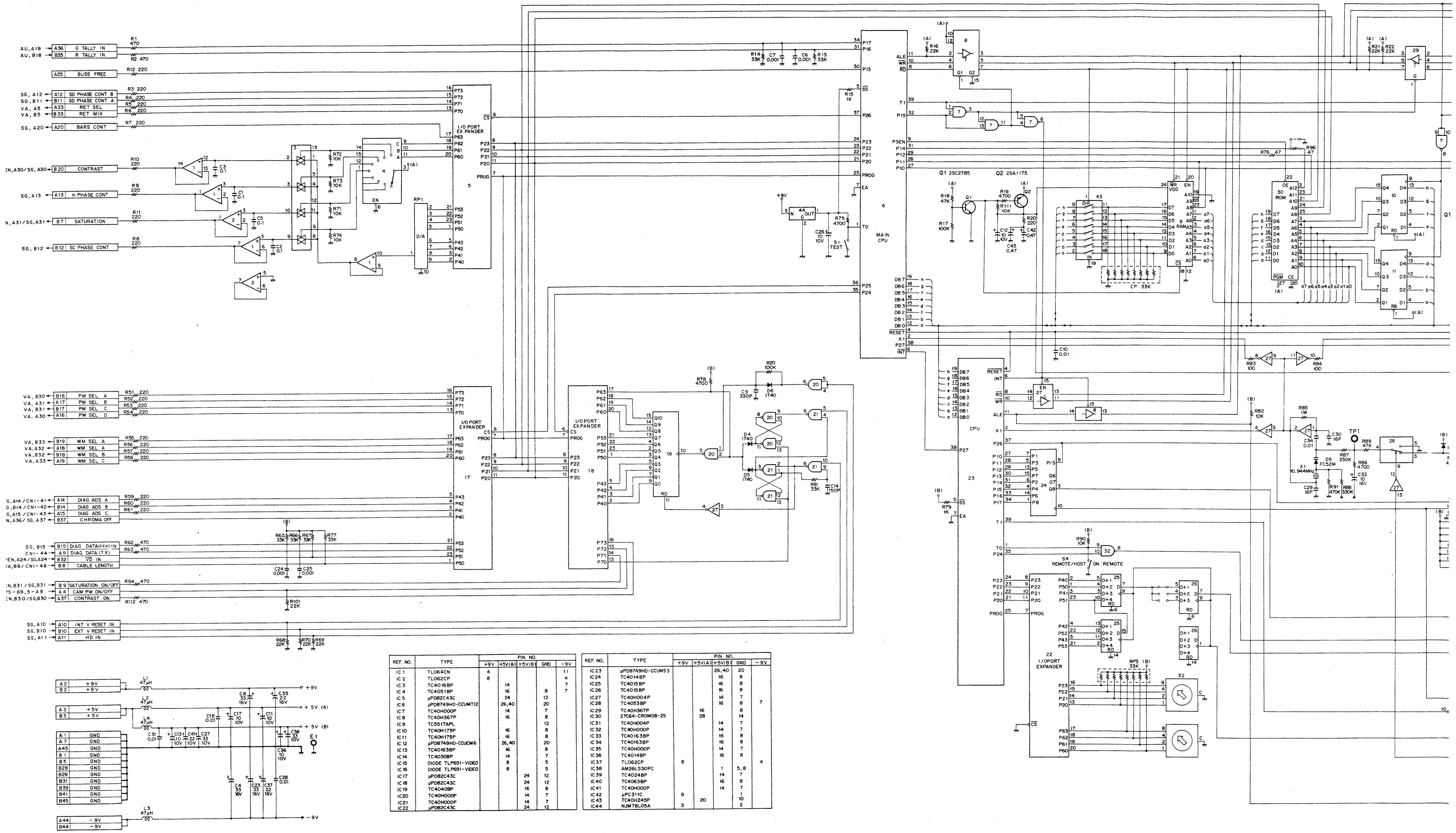
※ CHANGE INFORMATION

REF. NO.	DESCRIPTION	EFFECTIVE SER. NO.
R27	15K → 4700	10101 ~ (J) 20201 ~ (UC) 30101 ~ (AE)

AT-26

CCU-360 (J), (UC)
CCU-360P(AE)

AT-26 BOARD

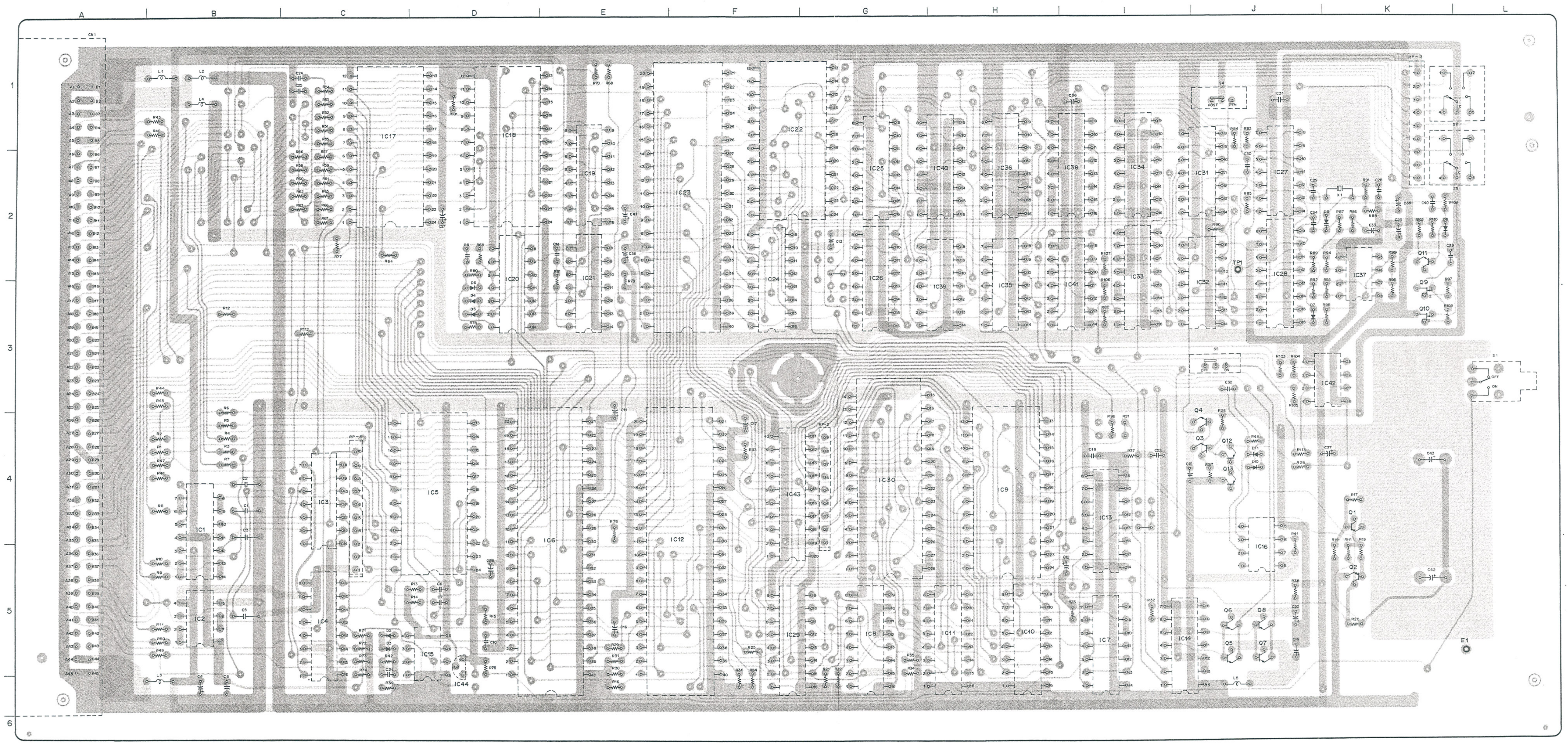

G TALLY IN
R TALLY IN
BUSS FREE
SD PHASE CONT B
SD PHASE CONT A
RET SEL
RET MIX
BARS CONT
CONTRAST
H PHASE CONT
SATURATION
SC PHASE CONT
PM SEL A
PM SEL B
PM SEL C
PM SEL D
WM SEL A
WM SEL B
WM SEL C
WM SEL C
DIAG ADS A
DIAG ADS B
DIAG ADS C
CHROMA OFF
DIAG DATA (CCU) IN
DIAG DATA (TX)
VD IN
CABLE LENGTH
SATURATION ON/OFF
CAM PW ON/OFF
CONTRAST ON
INT V RESET IN
EXT V RESET IN
HD IN
I/O PORT EXPANDER
D/A
MAIN CPU
CPU
ROM
RAM
S1 TEST
S4 REMOTE/HOST ON : REMOTE
X1 10.944MHz
Q1 2SC2785
Q2 2SA1175
TP1
E1
+9V
+5V (A)
+5V (B)
-9V
GND

REF. NO.	TYPE	PIN NO.				
		+9V	+5V(A)	+5V(B)	GND	−9V
IC 1	TL064CN	4				11
IC 2	TL062CP	8				4
IC 3	TC4016BP		14			7
IC 4	TC4051BP		16		8	7
IC 5	μPD82C43C		24		12	
IC 6	μPD8749HD-CCUMT12		26,40		20	
IC 7	TC40H000P		14		7	
IC 8	TC40H367P		16		8	
IC 9	TC5517APL				12	
IC 10	TC40H175P		16		8	
IC 11	TC40H175P		16		8	
IC 12	μPD8749HD-CCUCM6		26,40		20	
IC 13	TC40163BP		16		8	
IC 14	TC4030BP		14		7	
IC 15	DIODE TLP651-VIDEO		8		5	
IC 16	DIODE TLP651-VIDEO		8		5	
IC 17	μPD82C43C			24	12	
IC 18	μPD82C43C			24	12	
IC 19	TC4040BP			16	8	
IC20	TC40H000P			14	7	
IC21	TC40H000P			14	7	
IC22	μPD82C43C			24	12	

REF. NO.	TYPE	PIN NO.				
		+9V	+5V(A)	+5V(B)	GND	−9V
IC23	μPD8749HD-CCUMS3			26,40	20	
IC24	TC4014BP			16	8	
IC25	TC4015BP			16	8	
IC26	TC4015BP			16	8	
IC27	TC40H004P			14	7	
IC28	TC4053BP			16	8	7
IC29	TC40H367P		16		8	
IC30	27C64-CROM08-25		28		14	
IC31	TC40H004P			14	7	
IC32	TC40H000P			14	7	
IC33	TC40163BP			16	8	
IC34	TC40163BP			16	8	
IC35	TC40H000P			14	7	
IC36	TC4014BP			16	8	
IC37	TL062CP	8				4
IC38	AM26LS30PC			1	5, 8	
IC39	TC4024BP			14	7	
IC40	TC4063BP			16	8	
IC41	TC40H000P			14	7	
IC42	μPC311C	8			1	
IC43	TC40H245P		20		10	
IC44	NJM78L05A	3			2	

AT-26 BOARD
– SOLDERING SIDE –

Parts No. 1-615-207-**12**

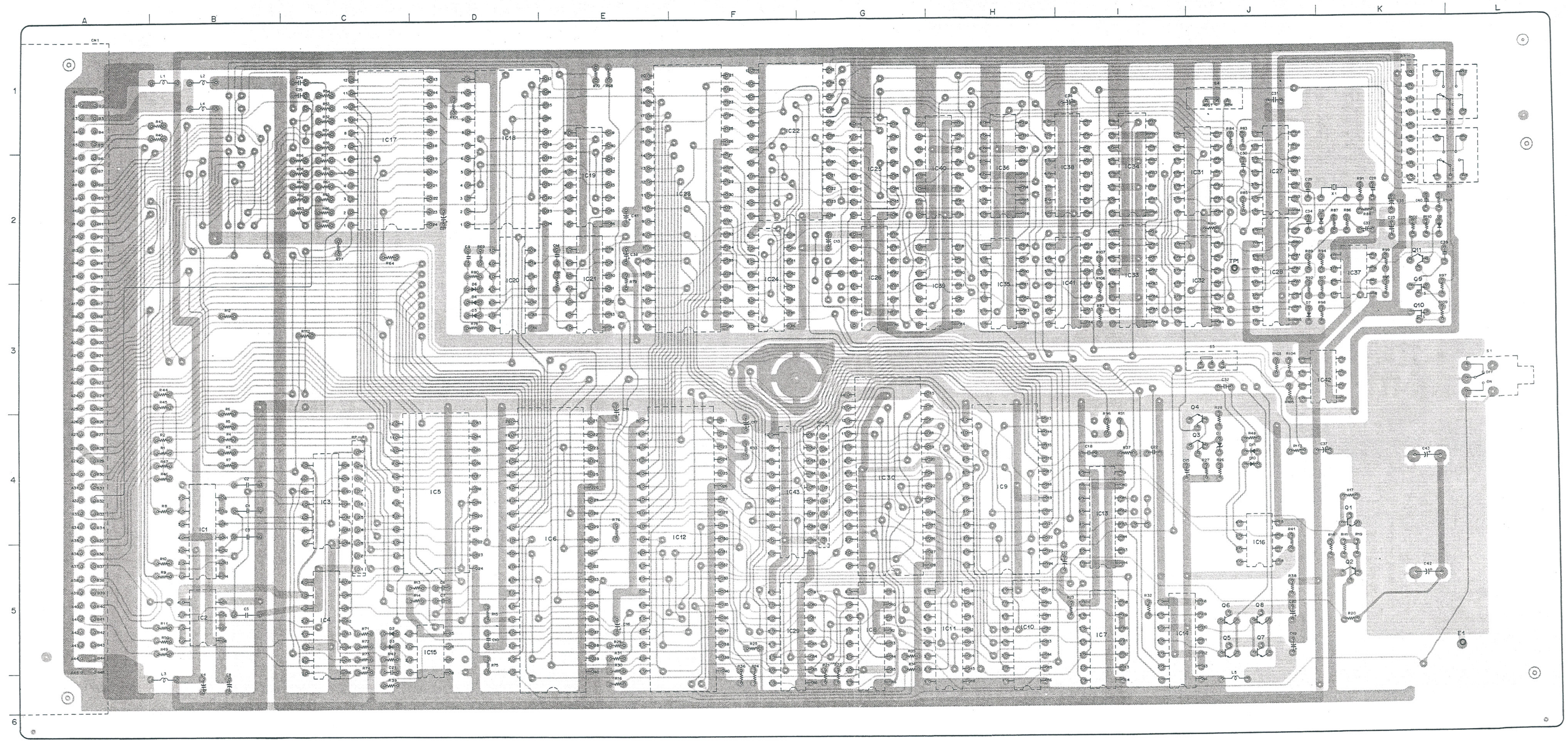


D1	J - 4
D2	C - 5
D3	C - 5
D4	D - 3
D5	D - 3
D6	D - 3
D7	J - 3
D8	K - 2
D9	K - 2
D10	J - 4
D11	J - 4
E1	L - 5
IC1	B - 4
IC2	B - 5
IC3	C - 4
IC4	C - 5
IC5	D - 4
IC6	E - 4
IC7	I - 5
IC8	G - 5
IC9	H - 4
IC10	H - 5
IC11	H - 5
IC12	F - 4
IC13	I - 4
IC14	I - 5
IC15	D - 5
IC16	J - 5
IC17	C - 1
IC18	D - 1
IC19	E - 2
IC20	D - 2
IC21	E - 2
IC22	F - 2
IC23	F - 2
IC24	F - 2
IC25	G - 2
IC26	G - 2
IC27	J - 2
IC28	J - 2
IC29	F - 5
IC30	G - 4
IC31	J - 2
IC32	J - 2
IC33	I - 2
IC34	I - 1
IC35	H - 3
IC36	H - 2
IC37	K - 2
IC38	I - 1
IC39	H - 3
IC40	H - 2
IC41	I - 2
IC42	K - 3
IC43	F - 4
IC44	D - 5
Q1	K - 4
Q2	K - 5
Q3	J - 4
Q4	J - 4
Q5	J - 5
Q6	J - 5
Q7	J - 5
Q8	J - 5
Q9	K - 3
Q10	K - 3
Q11	K - 2
Q12	J - 4
Q13	J - 4
S1	L - 3
S2	L - 1
S3	L - 2
S4	J - 1
S5	J - 3
TP1	J - 2
X1	K - 2

AT-26 BOARD
-SOLDERING SIDE-
1-615-207-12
CCU-360 (UC, J)
CCU-360P(AE)

AT-26 BOARD
– SOLDERING SIDE –

Parts No. 1-615-207-**11**

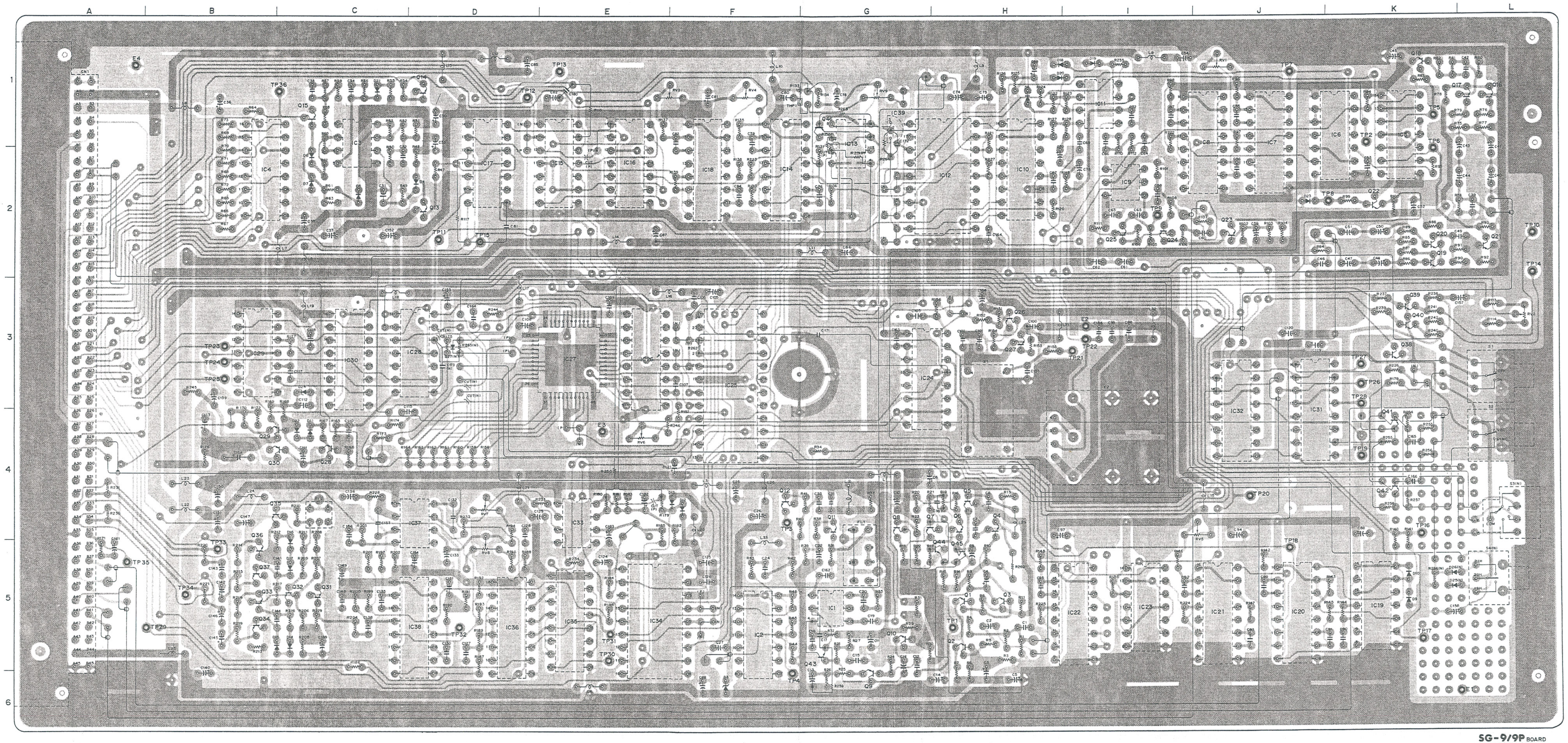

A
B
C
D
E
F
G
H
I
J
K
L
1
2
3
4
5
6
CN1
IC1
IC2
IC3
IC4
IC5
IC6
IC7
IC9
IC12
IC13
IC14
IC15
IC16
IC17
IC18
IC19
IC20
IC21
IC22
IC24
IC25
IC26
IC27
IC28
IC29
IC30
IC31
IC32
IC33
IC34
IC35
IC36
IC37
IC38
IC39
IC40
IC41
IC42
IC43
Q1
Q2
Q3
Q4
Q5
Q6
Q7
Q8
Q9
Q10
Q11
TP1
S1
S5
E1
X1
C42
C43

D1	J・4
D2	C・5
D3	C・5
D4	D・3
D5	D・3
D6	D・3
D7	J・3
D8	K・2
D9	K・2
D10	J・4
D11	J・4
E1	L・5
IC1	B・4
IC2	B・5
IC3	C・4
IC4	C・5
IC5	D・4
IC6	E・4
IC7	I・5
IC8	G・5
IC9	H・4
IC10	H・5
IC11	H・5
IC12	F・4
IC13	I・4
IC14	I・5
IC15	D・5
IC16	J・5
IC17	C・1
IC18	D・1
IC19	E・2
IC20	D・2
IC21	E・2
IC22	F・2
IC23	F・2
IC24	F・2
IC25	G・2
IC26	G・2
IC27	J・2
IC28	J・2
IC29	F・5
IC30	G・4
IC31	J・2
IC32	J・2
IC33	I・2
IC34	I・1
IC35	H・3
IC36	H・2
IC37	K・2
IC38	I・1
IC39	H・3
IC40	H・2
IC41	I・2
IC42	K・3
IC43	F・4
Q1	K・4
Q2	K・5
Q3	J・4
Q4	J・4
Q5	J・5
Q6	J・5
Q7	J・5
Q8	J・5
Q9	K・3
Q10	K・3
Q11	K・2
S1	L・3
S2	L・1
S3	L・2
S4	J・1
S5	J・3
TP1	J・2
X1	K・2

AT-26 BOARD
– SOLDERING SIDE –
1-615-207-11
CCU-360 (UC, J)
CCU-360P(AE)

SG-9/9A BOARD
– SOLDERING SIDE –

Parts No. 1-615-208-**11**



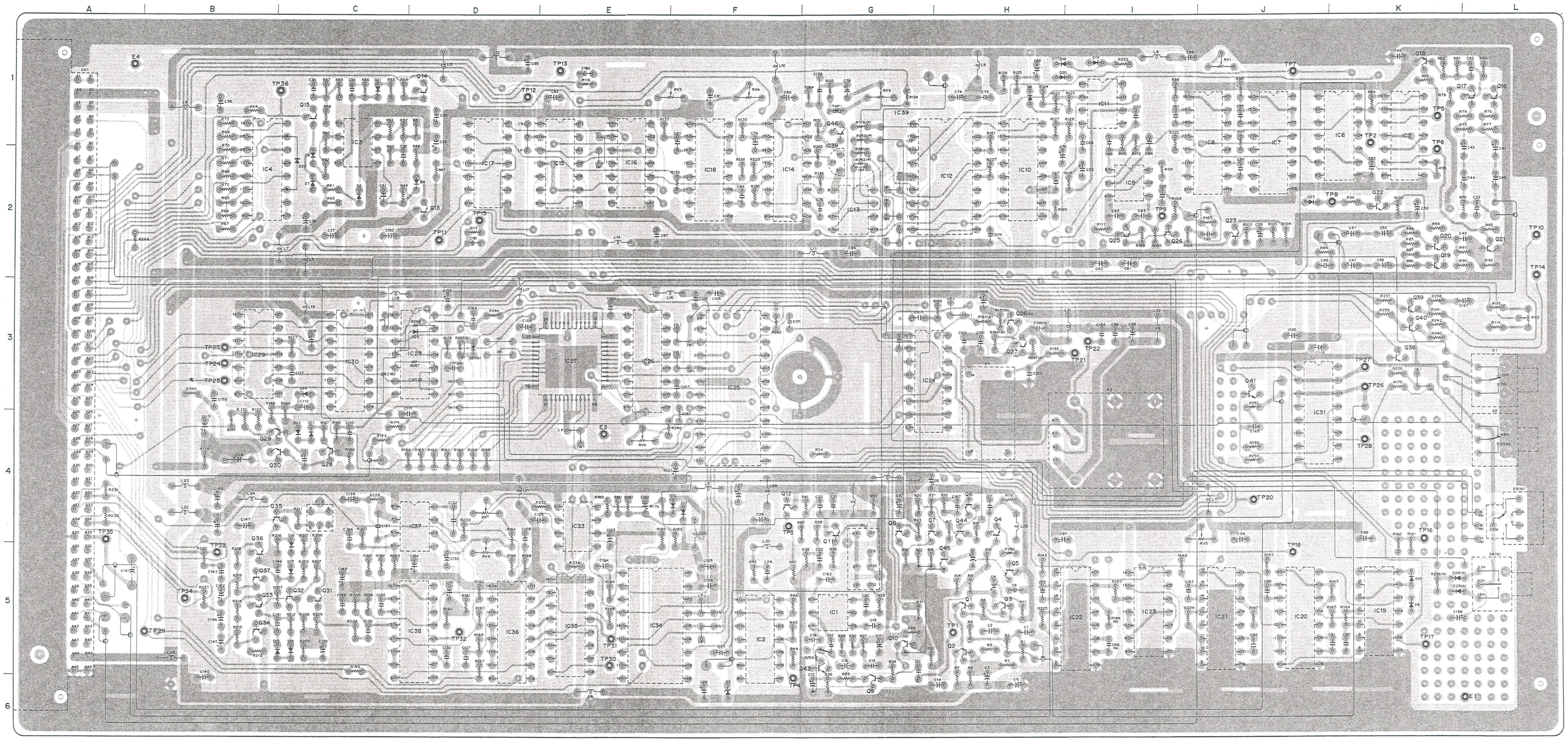
SG-9/9P BOARD
-SOLDERING SIDE-
1-615-208-11
CCU-360(UC,J)
CCU-360P(AE)

CN1	A - 1
D1	H - 5
D2	H - 5
D3	F - 6
D4	D - 2
D5	C - 2
D6	C - 2
D7	C - 2
D8	H - 1
D9	K - 5
D10	K - 5
D11	C - 4
D12	F - 4
D13	F - 4
D14	C - 5
D15	B - 5
D16	C - 5
D17	C - 5
D18	H - 1
D19	I - 1
D20	H - 1
D21	C - 1
D22	C - 4
D23	J - 2
D24	C - 3
D25	K - 5
D26	K - 5
D27	D - 3
E1	L - 6
E2	I - 3
E3	E - 4
E4	A - 1
FL1	G - 4
FL2	C - 4
IC1	G - 5
IC2	F - 5
IC3	C - 1
IC4	B - 2
IC5	K - 1
IC6	K - 1
IC7	J - 1
IC8	J - 1
IC9	I - 2
IC10	H - 2
IC11	I - 1
IC12	H - 2
IC13	G - 1
IC14	F - 2
IC15	E - 2
IC16	E - 2
IC17	D - 2
IC18	F - 2
IC19	K - 5
IC20	J - 5
IC21	J - 5
IC22	I - 5
IC23	I - 5
IC24	G - 3
IC25	F - 3
IC26	E - 3
IC27	E - 3
IC28	D - 3
IC29	B - 3
IC30	C - 3
IC31	J - 3
IC32	J - 3
IC33	E - 4
IC34	E - 5
IC35	E - 5
IC36	D - 5
IC37	D - 4
IC38	D - 5
IC39	G - 1
Q1	H - 5
Q2	H - 5
Q3	H - 5
Q4	H - 4
Q5	H - 4
Q6	H - 4
Q7	G - 4
Q8	G - 4
Q9	G - 5
Q10	G - 5
Q11	G - 4
Q12	F - 4
Q13	D - 2
Q14	D - 1
Q15	C - 1
Q16	L - 1
Q17	L - 1
Q18	K - 1
Q19	K - 2
Q20	K - 2
Q21	L - 2
Q22	K - 2
Q23	J - 2
Q24	I - 2
Q25	I - 2
Q26	H - 3
Q27	H - 3
Q28	C - 4
Q29	B - 4
Q30	B - 4
Q31	C - 5
Q32	C - 5
Q33	B - 5
Q34	B - 5
Q35	B - 4
Q36	B - 5
Q37	B - 5
Q38	K - 3
Q39	K - 3
Q40	K - 3
Q41	K - 4
Q42	K - 4

RV1	J - 1
RV2	L - 3
RV3	E - 1
RV4	F - 1
RV5	J - 4
RV6	E - 4
RV7	D - 4
RV8	D - 5
RV9	G - 1
RV10	H - 5
RV11	E - 4
S1	L - 3
S2	L - 4
S3	L - 4
S4	L - 5
TP1	H - 5
TP2	K - 1
TP3	F - 4
TP4	F - 5
TP5	K - 1
TP6	K - 1
TP7	J - 1
TP8	K - 2
TP9	I - 2
TP10	L - 2
TP11	D - 2
TP12	D - 1
TP13	E - 1
TP14	L - 2
TP15	D - 2
TP16	K - 4
TP17	K - 5
TP18	J - 5
TP19	K - 4
TP20	J - 4
TP21	I - 3
TP22	I - 3
TP23	B - 3
TP24	B - 3
TP25	B - 3
TP26	K - 3
TP27	A - 5
TP27	K - 3
TP28	C - 1
TP28	K - 3
TP29	B - 5
TP30	E - 5
TP31	E - 5
TP33	B - 5
TP32	D - 5
TP34	B - 5
TP35	A - 5
TP36	C - 1
X1	H - 3
X2	I - 3

SG-9/9A BOARD
– SOLDERING SIDE –

Parts No. 1-615-208-**12** (NTSC)
1-615-208-**21** (PAL)

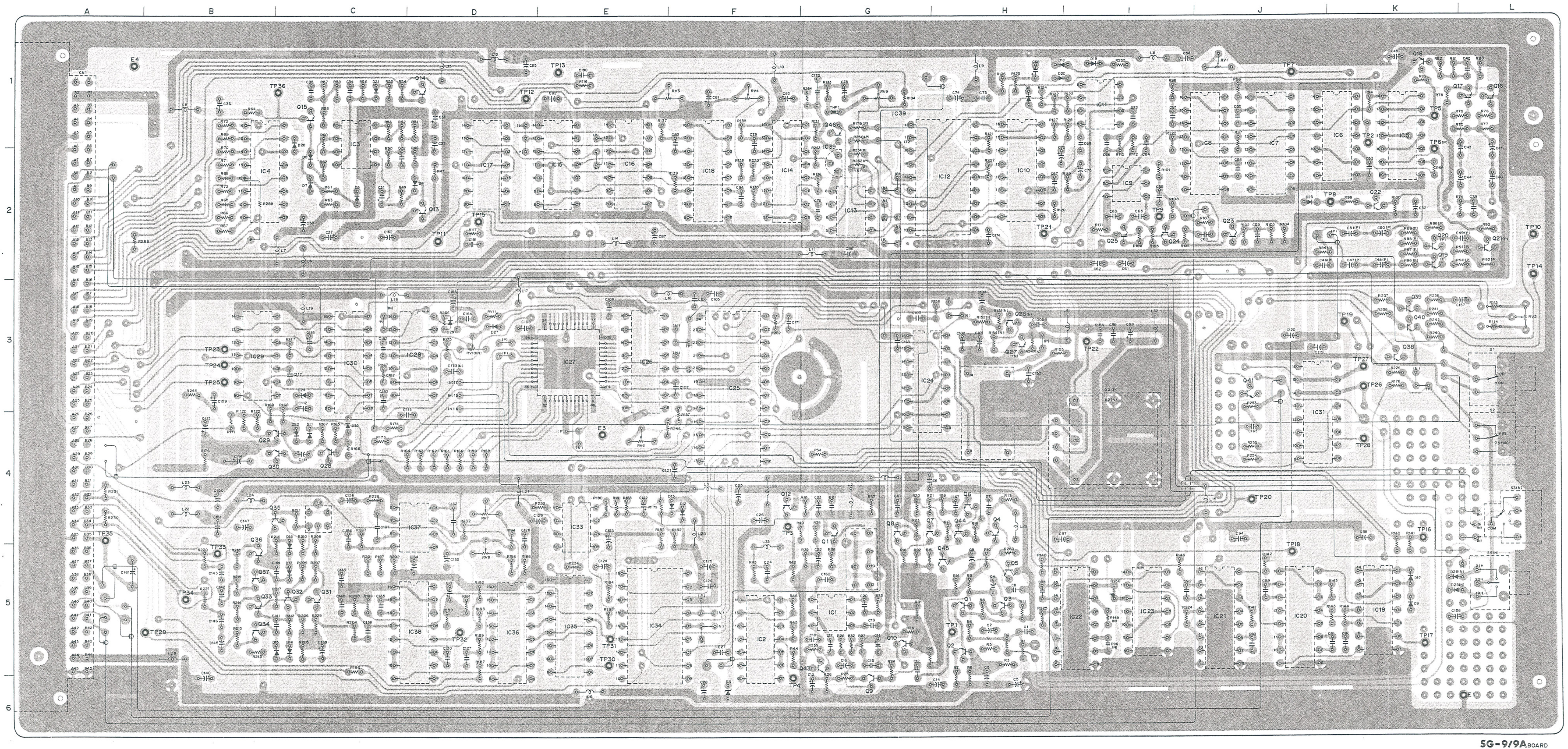


SG-9/9A BOARD
-SOLDERING SIDE-
1-615-208-12
CCU-360 (UC,J)
1-615-208-21
CCU-360P(AE)

CN1	A · 1	RV1	J · 1
		RV2	L · 3
D3	F · 6	RV3	E · 1
D4	D · 2	RV4	F · 1
D5	C · 2	RV5	J · 4
D6	C · 2	RV6	E · 4
D7	C · 2	RV7	D · 4
D8	H · 1	RV8	D · 5
D9	K · 5	RV9	G · 1
D10	K · 5		
D11	C · 4	S1	L · 3
D12	F · 4	S2	L · 4
D13	F · 4	S3	L · 4
D14	C · 5	S4	L · 5
D15	B · 5		
D16	C · 5	TP1	H · 5
D17	C · 5	TP2	K · 1
D18	H · 1	TP3	F · 4
D19	I · 1	TP4	F · 5
D20	H · 1	TP5	K · 1
D21	C · 1	TP6	K · 1
D22	C · 4	TP7	J · 1
D23	J · 2	TP8	K · 2
D24	C · 3	TP9	I · 2
D25	K · 5	TP10	L · 2
D26	K · 5	TP11	D · 2
D27	D · 3	TP12	D · 1
D28	C · 2	TP13	E · 1
		TP14	L · 2
E1	L · 6	TP15	D · 2
E3	E · 4	TP16	K · 4
E4	A · 1	TP17	K · 5
		TP18	J · 5
FL1	G · 4	TP20	J · 4
FL2	C · 4	TP21	I · 3
		TP22	I · 3
IC1	G · 5	TP23	B · 3
IC2	F · 5	TP24	B · 3
IC3	C · 1	TP25	B · 3
IC4	B · 2	TP26	K · 3
IC5	K · 1	TP27	K · 3
IC6	K · 1	TP28	K · 4
IC7	J · 1	TP29	B · 5
IC8	J · 1	TP30	E · 5
IC9	I · 2	TP31	E · 5
IC10	H · 2	TP33	B · 5
IC11	I · 1	TP32	D · 5
IC12	H · 2	TP34	B · 5
IC13	G · 2	TP35	A · 5
IC14	F · 2	TP36	C · 1
IC15	E · 2		
IC16	E · 2	X1	H · 3
IC17	D · 2	X2	I · 3
IC18	F · 2		
IC19	K · 5		
IC20	J · 5		
IC21	J · 5		
IC22	I · 5		
IC23	I · 5		
IC24	G · 3		
IC25	F · 3		
IC26	E · 3		
IC27	E · 3		
IC28	D · 3		
IC29	B · 3		
IC30	C · 3		
IC31	J · 3		
IC33	E · 4		
IC34	E · 5		
IC35	E · 5		
IC36	D · 5		
IC37	D · 4		
IC38	D · 5		
IC39	G · 2		
Q1	H · 5		
Q2	H · 5		
Q3	H · 5		
Q4	H · 4		
Q5	H · 5		
Q6	H · 4		
Q7	G · 4		
Q8	G · 4		
Q9	G · 5		
Q10	G · 5		
Q11	G · 4		
Q12	F · 4		
Q13	D · 2		
Q14	D · 1		
Q15	C · 1		
Q16	L · 1		
Q17	L · 1		
Q18	K · 1		
Q19	K · 2		
Q20	K · 2		
Q21	L · 2		
Q22	K · 2		
Q23	J · 2		
Q24	I · 2		
Q25	I · 2		
Q26	H · 3		
Q27	H · 3		
Q28	C · 4		
Q29	B · 4		
Q30	B · 4		
Q31	C · 5		
Q32	C · 5		
Q33	B · 5		
Q34	B · 5		
Q35	B · 4		
Q36	B · 5		
Q37	B · 5		
Q38	K · 3		
Q39	K · 3		
Q40	K · 3		
Q41	J · 3		
Q43	G · 5		
Q44	H · 5		
Q45	H · 5		
Q46	G · 1		

SG-9/9A BOARD
– SOLDERING SIDE –

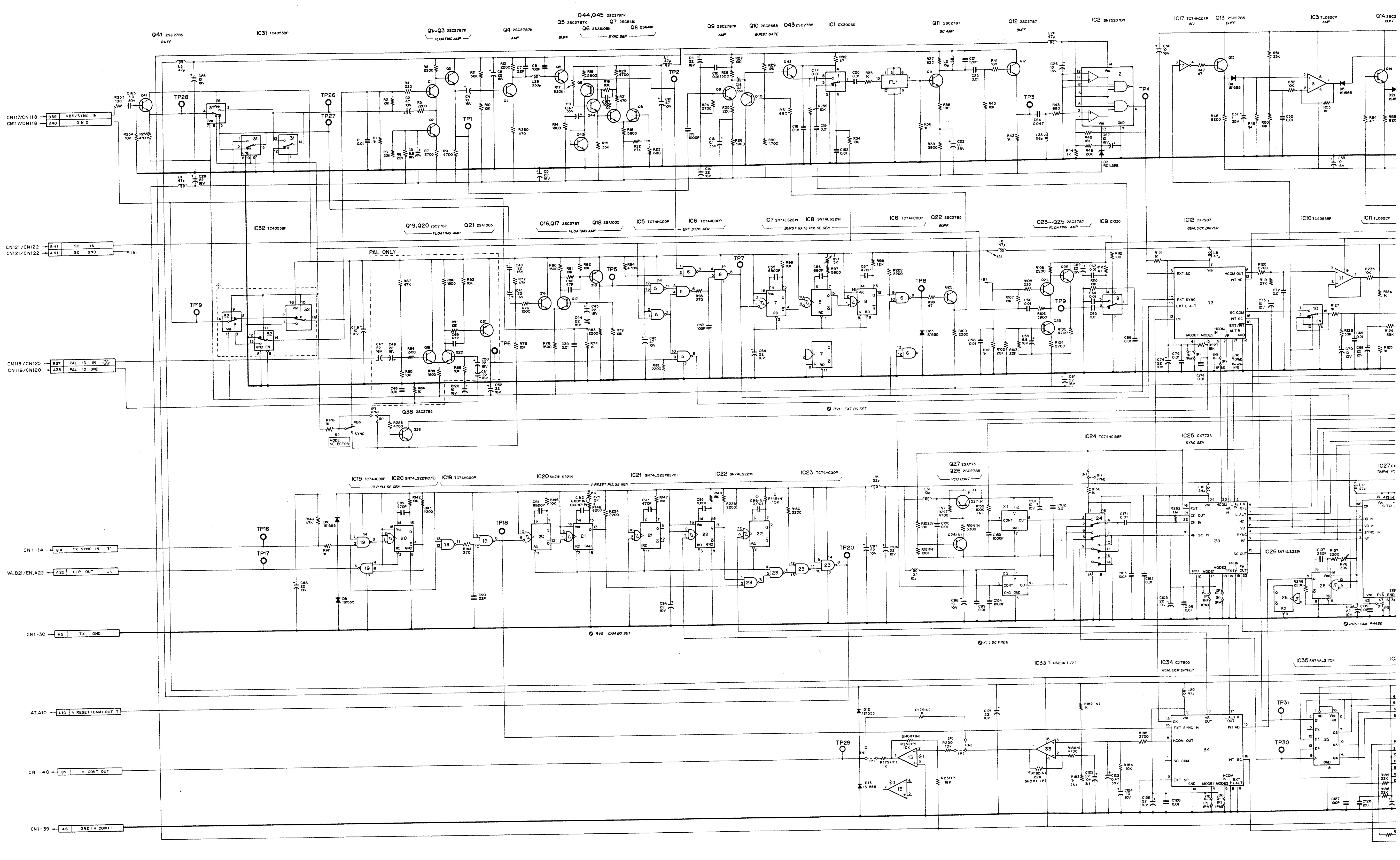
Parts No. 1-615-208-**13** (NTSC)
1-615-208-**22** (PAL)

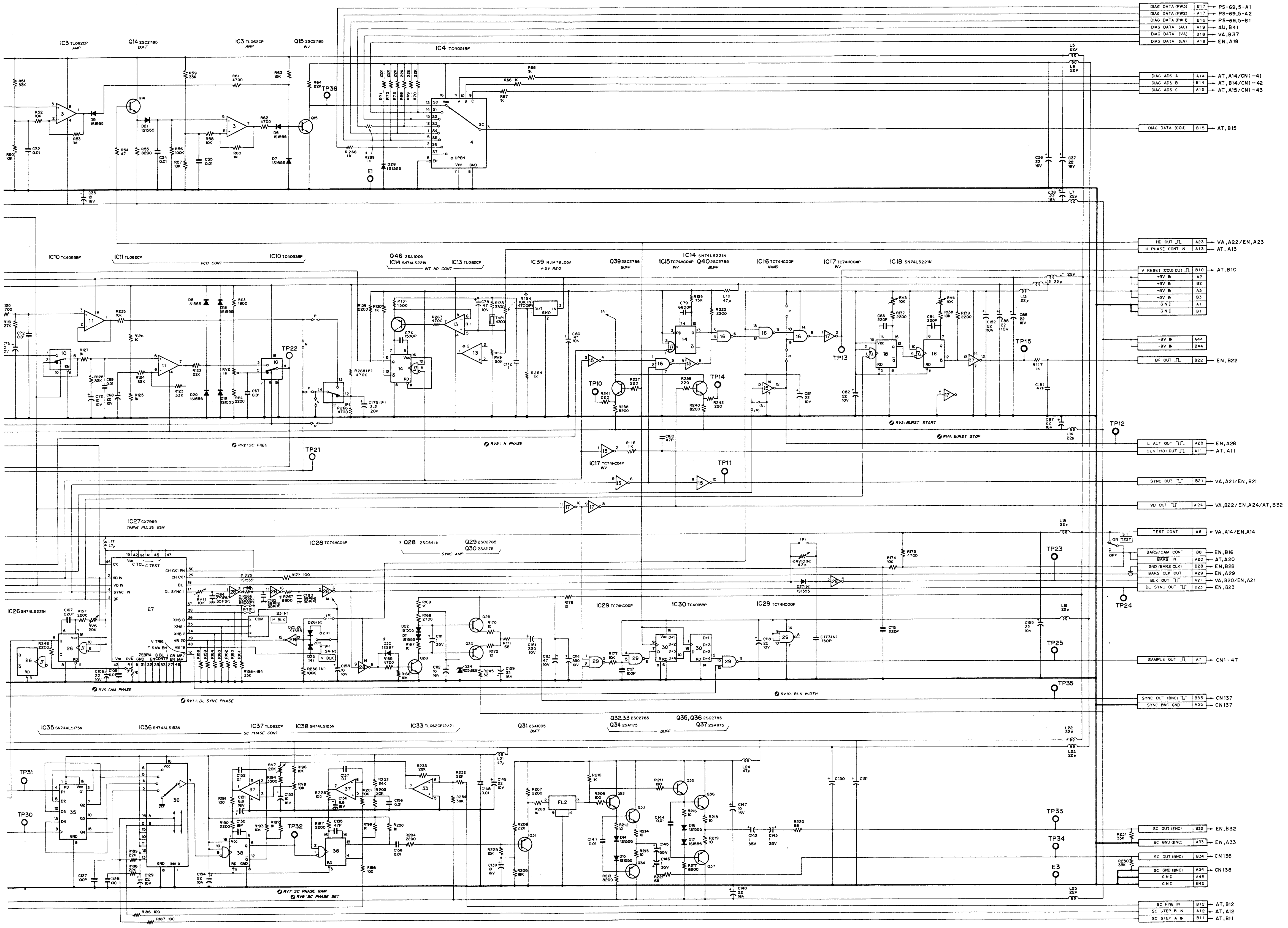


SG-9/9A BOARD
-SOLDERING SIDE-
1-615-208-13
CCU-360(UC,J)
1-615-208-22
CCU-360P(AE)

CN1	A · 1
D3	F · 6
D4	D · 2
D5	C · 2
D6	C · 2
D7	C · 2
D8	H · 1
D9	K · 5
D10	K · 5
D11	C · 4
D12	F · 4
D13	F · 4
D14	C · 5
D15	B · 5
D16	C · 5
D17	C · 5
D18	H · 1
D19	I · 1
D20	H · 1
D21	C · 1
D22	C · 4
D23	J · 2
D24	C · 3
D25	K · 5
D26	K · 5
D27	D · 3
D28	C · 2
D29	D · 3
D30	C · 4
E1	L · 6
E3	E · 4
E4	A · 1
FL1	G · 4
FL2	C · 4
IC1	G · 5
IC2	F · 5
IC3	C · 1
IC4	B · 2
IC5	K · 1
IC6	K · 1
IC7	J · 1
IC8	J · 1
IC9	I · 2
IC10	H · 2
IC11	I · 1
IC12	H · 2
IC13	G · 2
IC14	F · 2
IC15	E · 2
IC16	E · 2
IC17	D · 2
IC18	F · 2
IC19	K · 5
IC20	J · 5
IC21	J · 5
IC22	I · 5
IC23	I · 5
IC24	G · 3
IC25	F · 3
IC26	E · 3
IC27	E · 3
IC28	D · 3
IC29	B · 3
IC30	C · 3
IC31	J · 3
IC33	E · 4
IC34	E · 5
IC35	E · 5
IC36	D · 5
IC37	D · 4
IC38	D · 5
IC39	G · 2
Q1	H · 5
Q2	H · 5
Q3	H · 5
Q4	H · 4
Q5	H · 5
Q6	H · 4
Q7	G · 4
Q8	G · 4
Q9	G · 5
Q10	G · 5
Q11	G · 4
Q12	F · 4
Q13	D · 2
Q14	D · 1
Q15	C · 1
Q16	L · 1
Q17	L · 1
Q18	K · 1
Q19	K · 2
Q20	K · 2
Q21	L · 2
Q22	K · 2
Q23	J · 2
Q24	I · 2
Q25	I · 2
Q26	H · 3
Q27	H · 3
Q28	C · 4
Q29	B · 4
Q30	B · 4
Q31	C · 5
Q32	C · 5
Q33	B · 5
Q34	B · 5
Q35	B · 4
Q36	B · 5
Q37	B · 5
Q38	K · 3
Q39	K · 3
Q40	K · 3
Q41	J · 3
Q43	G · 5
Q44	H · 5
Q45	H · 5
Q46	G · 1
RV1	J · 1
RV2	L · 3
RV3	E · 1
RV4	F · 1
RV5	J · 4
RV6	E · 4
RV7	D · 4
RV8	D · 5
RV9	G · 1
RV11	D · 3
S1	L · 3
S2	L · 4
S3	L · 4
S4	L · 5
TP1	H · 5
TP2	K · 1
TP3	F · 4
TP4	F · 5
TP5	K · 1
TP6	K · 1
TP7	J · 1
TP8	K · 2
TP9	I · 2
TP10	L · 2
TP11	D · 2
TP12	D · 1
TP13	E · 1
TP14	L · 2
TP15	D · 2
TP16	K · 4
TP17	K · 5
TP18	J · 5
TP20	J · 4
TP21	I · 3
TP22	I · 3
TP23	B · 3
TP24	B · 3
TP25	B · 3
TP26	K · 3
TP27	K · 3
TP28	K · 4
TP29	B · 5
TP30	E · 5
TP31	E · 5
TP33	B · 5
TP32	D · 5
TP34	B · 5
TP35	A · 5
TP36	C · 1
X1	H · 3
X2	I · 3

SG-9/9A BOARD


Q41 2SC2785 BUFF
IC31 TC4053BP
Q1~Q3 2SC2787K FLOATING AMP
Q4 2SC2787K AMP
Q44,Q45 2SC2787K
Q5 2SC2787K BUFF
Q6 2SA1005K
Q7 2SC941K
Q8 2SA141K SYNC SEP
Q9 2SC2787K AMP
Q10 2SC2668 BURST GATE
Q43 2SC2785
IC1 CX20080
Q11 2SC2787 SC AMP
Q12 2SC2787 BUFF
IC2 SN75207BN
IC17 TC74HC04P INV
Q13 2SC2785 BUFF
IC3 TL062CP AMP
Q14
CN117/CN118 B39 VBS/SYNC IN
CN117/CN118 A40 GND
TP28
TP26
TP27
TP1
TP2
TP3
TP4
FL1
IC32 TC4053BP
Q19,Q20 2SC2787 FLOATING AMP
Q21 2SA1005
Q16,Q17 2SC2787 FLOATING AMP
Q18 2SA1005
IC5 TC74HC00P
IC6 TC74HC00P EXT SYNC GEN
IC7 SN74LS221N
IC8 SN74LS221N BURST GATE PULSE GEN
IC6 TC74HC00P
Q22 2SC2785 BUFF
Q23~Q25 2SC2787 FLOATING AMP
IC9 CX130
IC12 CX7903 GENLOCK DRIVER
IC10 TC4053BP
IC11 TL062CP
CN121/CN122 B41 SC IN
CN121/CN122 A41 SC GND
PAL ONLY
TP19
TP5
TP6
TP7
TP8
TP9
CN119/CN120 B37 PAL ID IN
CN119/CN120 A38 PAL ID GND
Q38 2SC2785
S2 MODE SELECTOR
VBS
SYNC
RV1 : EXT BG SET
IC24 TC74HC158P
IC25 CX773A SYNC GEN
IC27
Q27 2SA1175
Q26 2SC2785 VCO CONT
X1
X2
IC19 TC74HC00P
IC20 SN74LS221N(1/2) CLP PULSE GEN
IC19 TC74HC00P
IC20 SN74LS221N
IC21 SN74LS221N(2/2) V RESET PULSE GEN
IC22 SN74LS221N
IC23 TC74HC00P
IC26 SN74LS221N
TP16
TP17
TP18
TP20
CN1-14 B4 TX SYNC IN
VA,B21/EN,A22 A22 CLP OUT
CN1-30 A5 TX GND
RV5 : CAM BG SET
X1 : SC FREQ
RV6 : CAM PHASE
IC33 TL062CN (1/2)
IC34 CX7903 GENLOCK DRIVER
IC35 SN74ALS175N
TP29
TP30
TP31
AT,A10 A10 V RESET (CAM) OUT
CN1-40 B5 H CONT OUT
CN1-39 A6 GND (H CONT)


IC3 TL062CP AMP
Q14 2SC2785 BUFF
IC3 TL062CP AMP
Q15 2SC2785 INV
IC4 TC4051BP
TP36
E1
IC10 TC4053BP
IC11 TL062CP
VCO CONT
IC10 TC4053BP
Q46 2SA1005
IC14 SN74LS221N
INT HD CONT
IC13 TL082CP
IC39 NJM78L05A
+5V REG
Q39 2SC2785 BUFF
IC14 SN74LS221N
IC15 TC74HC04P INV
Q40 2SC2785 BUFF
IC16 TC74HC00P NAND
IC17 TC74HC04P INV
IC18 SN74LS221N
TP22
TP10
TP14
TP13
TP15
TP12
TP21
TP11
RV2: SC FREQ
RV9: H PHASE
RV3: BURST START
RV4: BURST STOP
IC17 TC74HC04P INV
IC27 CX7969 TIMING PULSE GEN
IC28 TC74HC04P
Q28 2SC641K
Q29 2SC2785
Q30 2SA175
SYNC AMP
IC26 SN74LS221N
IC29 TC74HC00P
IC30 TC4015BP
IC29 TC74HC00P
TP23
TP24
TP25
TP35
RV6: CAM PHASE
RV11: DL SYNC PHASE
RV10: BLK WIDTH
IC35 SN74ALS175N
IC36 SN74ALS153N
IC37 TL062CP
IC38 SN74LS123N
IC33 TL062CP(2/2)
SC PHASE CONT
Q31 2SA1005 BUFF
Q32,33 2SC2785
Q34 2SA175
Q35,Q36 2SC2785
Q37 2SA175
BUFF
FL2
TP31
TP30
TP32
TP33
TP34
E3
RV7: SC PHASE GAIN
RV8: SC PHASE SET
DIAG DATA (PW3) B17 → PS-69,5-A1
DIAG DATA (PW2) A17 → PS-69,5-A2
DIAG DATA (PW 1) B16 → PS-69,5-B1
DIAG DATA (AU) A19 → AU,B41
DIAG DATA (VA) B18 → VA,B37
DIAG DATA (EN) A18 → EN,A18
DIAG ADS A A14 → AT,A14/CN1-41
DIAG ADS B B14 → AT,B14/CN1-42
DIAG ADS C A15 → AT,A15/CN1-43
DIAG DATA (CCU) B15 → AT,B15
HD OUT A23 → VA,A22/EN,A23
H PHASE CONT IN A13 ← AT,A13
V RESET (CCU) OUT B10 → AT,B10
+9V IN A2
+9V IN B2
+5V IN A3
+5V IN B3
GND A1
GND B1
-9V IN A44
-9V IN B44
BF OUT B22 → EN,B22
L ALT OUT A28 → EN,A28
CLK (HD) OUT A11 → AT,A11
SYNC OUT B21 → VA,A21/EN,B21
VD OUT A24 → VA,B22/EN,A24/AT,B32
S1 ON TEST OFF
TEST CONT A8 → VA,A14/EN,A14
BARS/CAM CONT B8 → EN,B16
BARS IN A20 ← AT,A20
GND (BARS CLK) B28 → EN,B28
BARS CLK OUT A29 → EN,A29
BLK OUT A21 → VA,B20/EN,A21
DL SYNC OUT B23 → EN,B23
SAMPLE OUT A7 → CN1-47
SYNC OUT (BNC) B35 → CN137
SYNC BNC GND A35 → CN137
SC OUT (ENC) B32 → EN,B32
SC GND (ENC) A33 → EN,A33
SC OUT (BNC) B34 → CN138
SC GND (BNC) A34 → CN138
GND A45
GND B45
SC FINE IN B12 ← AT,B12
SC STEP B IN A12 ← AT,A12
SC STEP A IN B11 ← AT,B11

※ CHANGE INFORMATION

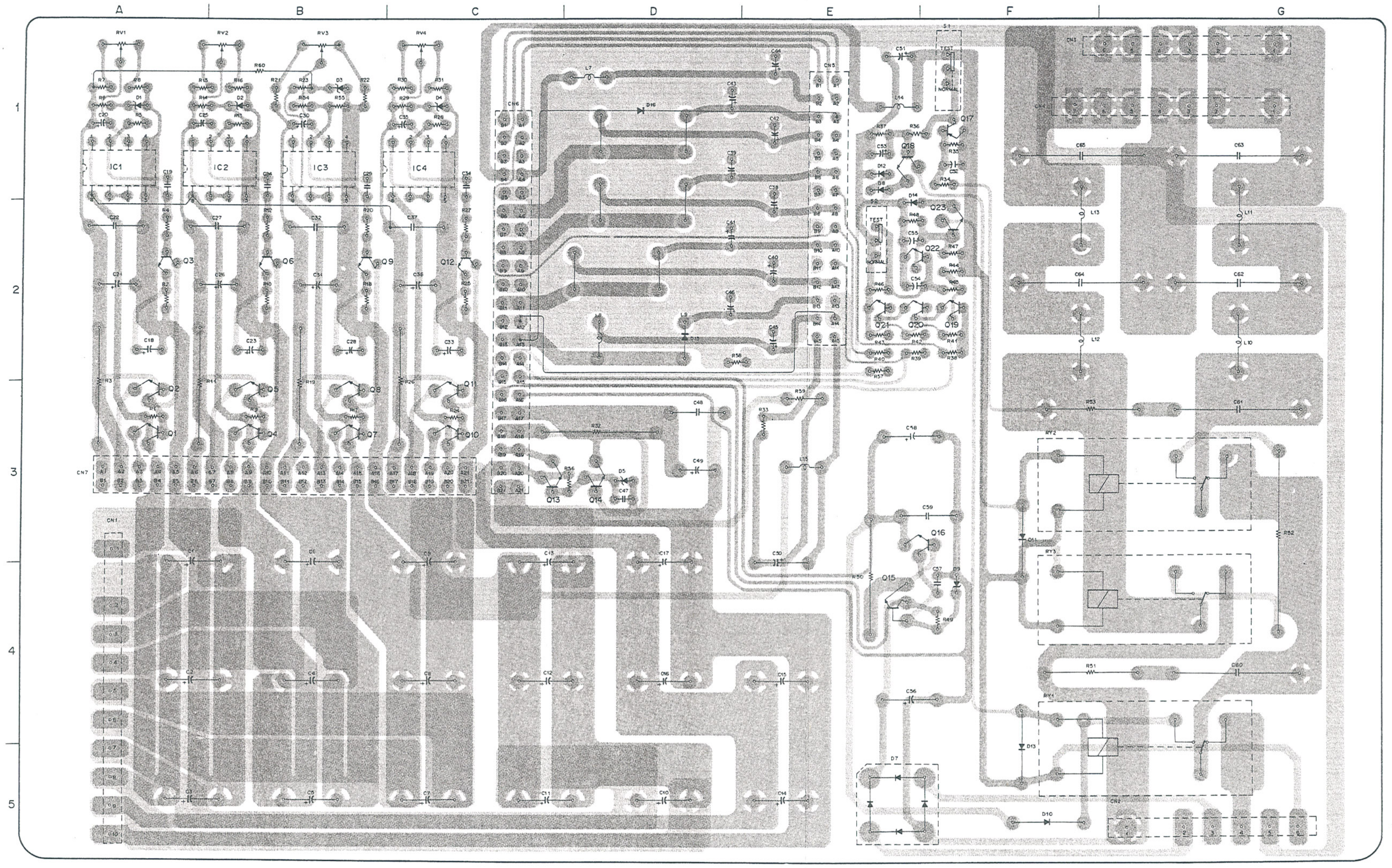
REF. NO.	DESCRIPTION	EFFECTIVE SER. NO.
R180 (N)	470 → 22K	10101 ~ (J)
IC13	※2 → ※1	20201 ~ (UC)
R134 (N)	4700 → 10K	30201 ~ (AE)
C96	OPEN → 0.001	
R149	OPEN → 15K	
IC32	TC4053BP → DELETE	
RV5	2K → SHORT	10301 ~ (J)
R146	5600 → 6200	20601 ~ (UC)
RV10(N)	R265(N) 4.7K → RV10	30501 ~ (AE)
R289	SHORT → 1K	
RV11	R244 6200(N) 6800(P) → RV11	
D29	OPEN → 1S1555	
RV1	2K → 5K	10301 ~ (J)
R266	4700(N) → 2000(N)	20401 ~ (UC)
R267	4700(N) → 6800	30301 ~ (AE)
D30	C110 22P → 1SS97	
Q28	2SC2668 → 2SC641K	

SG-9/9A

CCU-360(J,UC)
CCU-360P(AE)

POWER SUPPLY

CN-13, 14 BOARD
FU-25 BOARD
LE-29 BOARD
PS-69, 70 BOARD
RE-18(A), 18(B) BOARD
– SOLDERING SIDE –

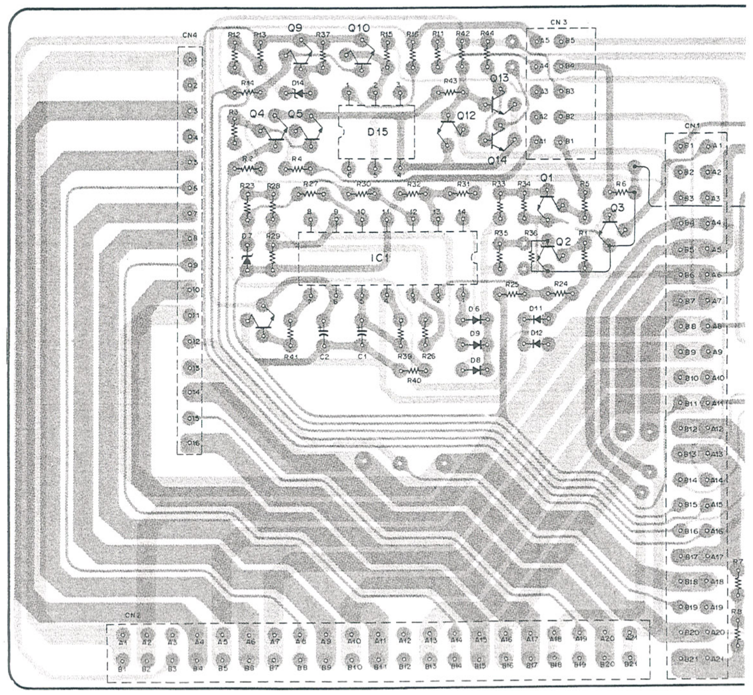

A
B
C
D
E
F
G
1
2
3
4
5
IC1
IC2
IC3
IC4
CN1
CN5
CN6
CN7
RV1
RV2
RV3
RV4

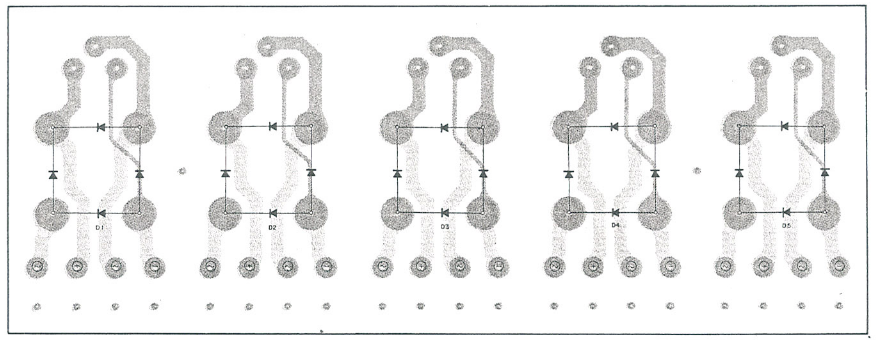
CN1	A - 4
CN2	G - 5
CN3	G - 1
CN4	G - 1
CN5	E - 1
CN6	C - 2
CN7	B - 3
D1	A - 1
D2	B - 1
D3	B - 1
D4	C - 1
D5	D - 3
D7	E - 5
D8	E - 1
D9	F - 4
D10	F - 5
D11	F - 3
D12	E - 1
D13	F - 5
D14	E - 2
D15	D - 2
D16	D - 2
IC1	A - 1
IC2	B - 1
IC3	B - 1
IC4	C - 1
Q1	A - 3
Q2	A - 3
Q3	A - 2
Q4	B - 3
Q5	B - 3
Q6	B - 2
Q7	B - 3
Q8	B - 3
Q9	B - 2
Q10	C - 3
Q11	C - 3
Q12	C - 2
Q13	C - 3
Q14	D - 3
Q15	E - 4
Q16	F - 3
Q17	F - 1
Q18	E - 1
Q19	F - 2
Q20	E - 2
Q21	E - 2
Q22	E - 2
Q23	F - 2
RV1	A - 1
RV2	B - 1
RV3	B - 1
RV4	C - 1
RY1	G - 5
RY2	G - 3
RY3	G - 4

Parts No. 1-615-211-**11**

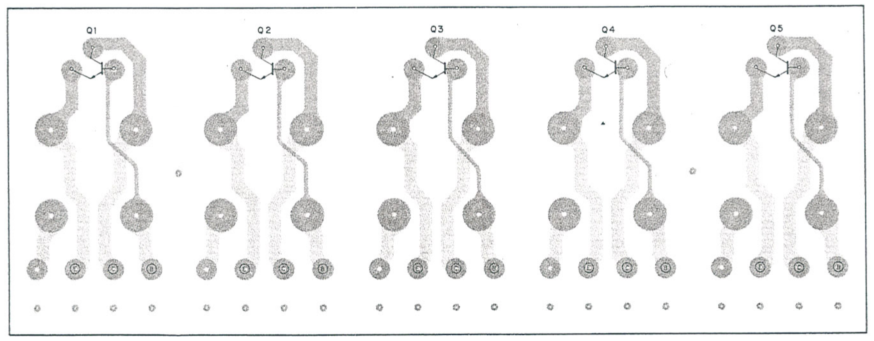
PS-69 BOARD
-SOLDERING SIDE-
1-615-211-11
CCU-360(J,UC)
CCU-360P(AE)

Parts No. 1-615-212-**11**

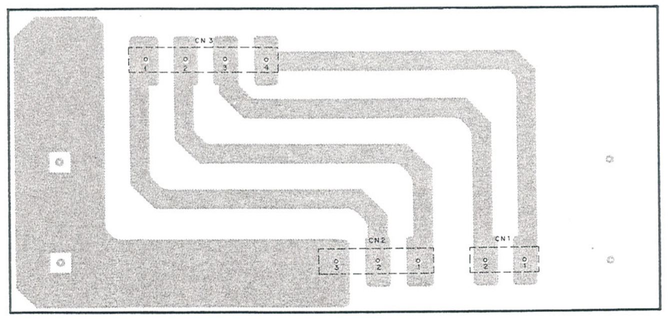

CN4
CN3
CN5
CN2
Q9
Q10
Q4
Q5
D15
Q12
Q13
Q14
Q1
Q2
Q3
IC1


D1
D2
D3
D4
D5

RE-18(A) BOARD
—SOLDERING SIDE—
1-615-201-11
CCU-360
CCU-360P

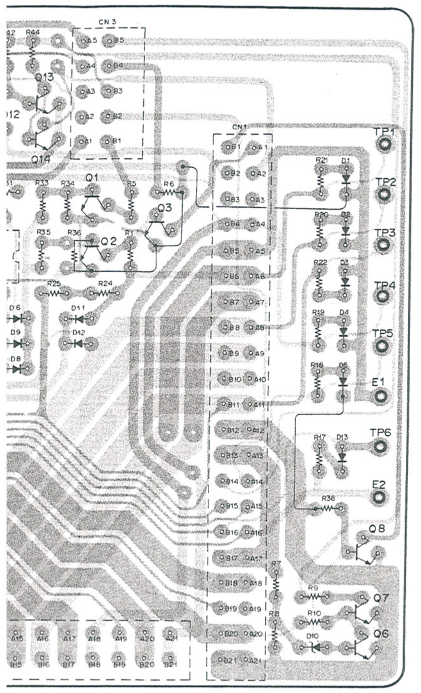

Q1
Q2
Q3
Q4
Q5

RE-18(B) BOARD
—SOLDERING SIDE—
1-615-201-11
CCU-360
CCU-360P

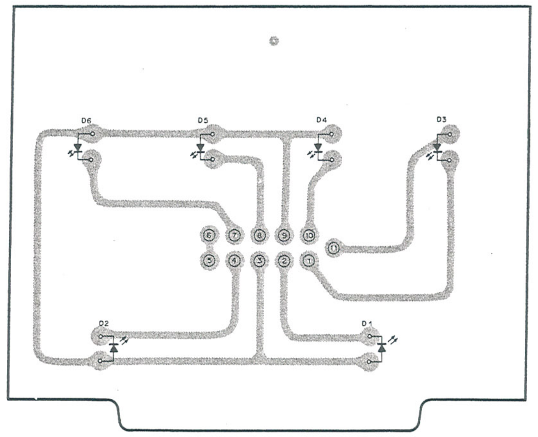


CN-13 BOARD
-SOLDERING SIDE-
1-615-213-11
CCU-360
CCU-360P

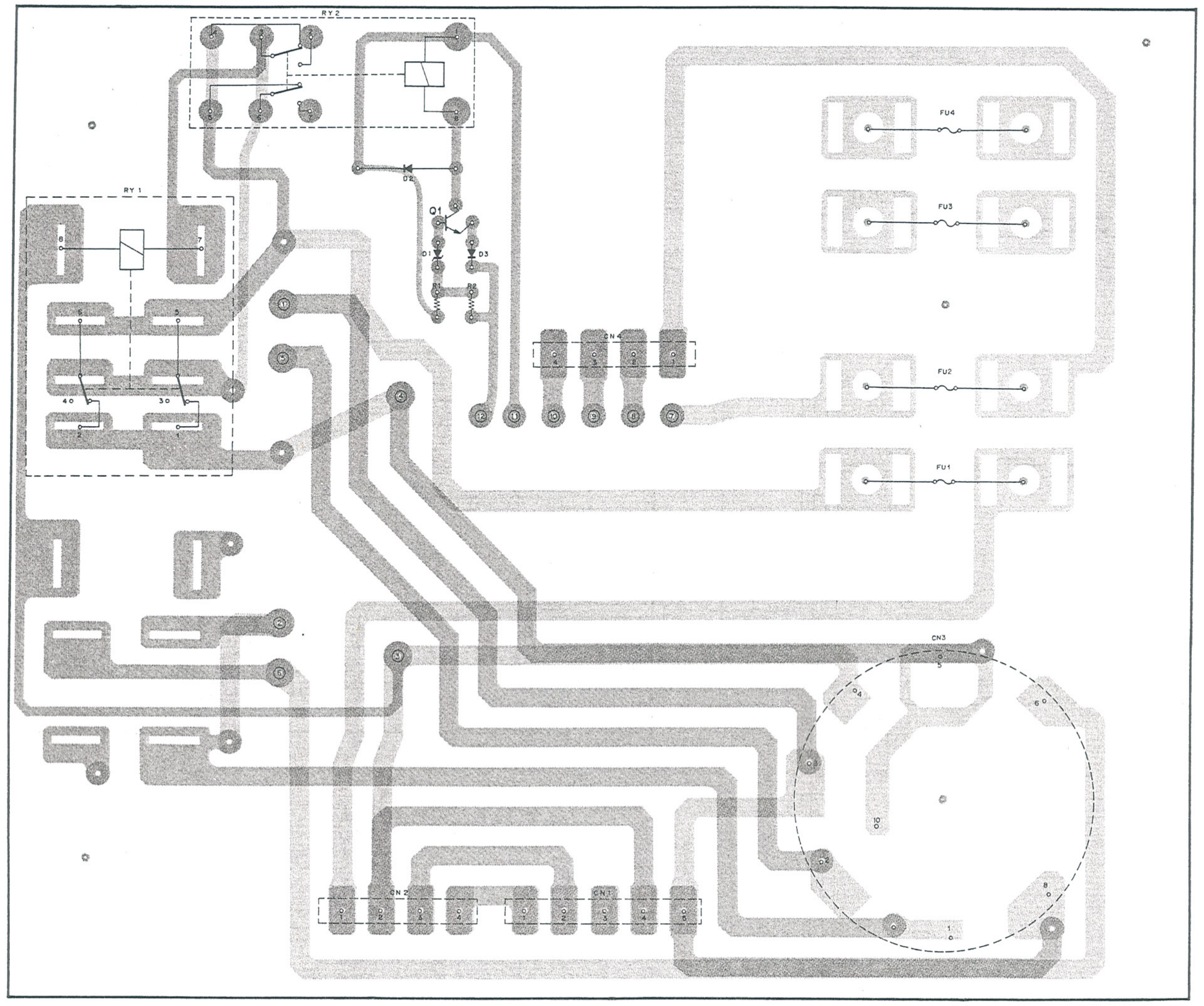
-11


CN3
CN1
Q1
Q2
Q3
Q7
Q8
Q6
Q12
Q13
Q14
TP1
TP2
TP3
TP4
TP5
TP6
E1
E2

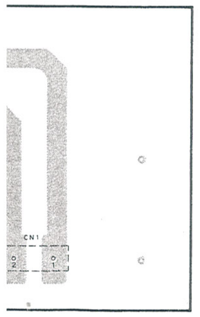
PS-70 BOARD
-SOLDERING SIDE-
1-615-212-11
CCU-360(J,UC)
CCU-360P(AE)


D6
D5
D4
D3
D2
D1

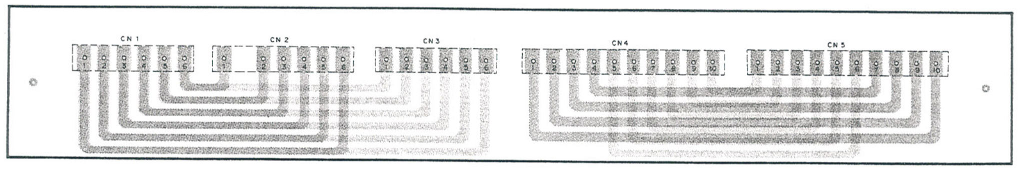
LE-29 BOARD
-SOLDERING SIDE-
1-615-200-11
CCU-360
CCU-360P


RY2
RY1
Q1
D1
D2
D3
FU4
FU3
FU2
FU1
CN4
CN3
CN2
CN1

FU-25 BOARD
-SOLDERING SIDE-
1-615-215-12
CCU-360(J,UC)
CCU-360P(AE)



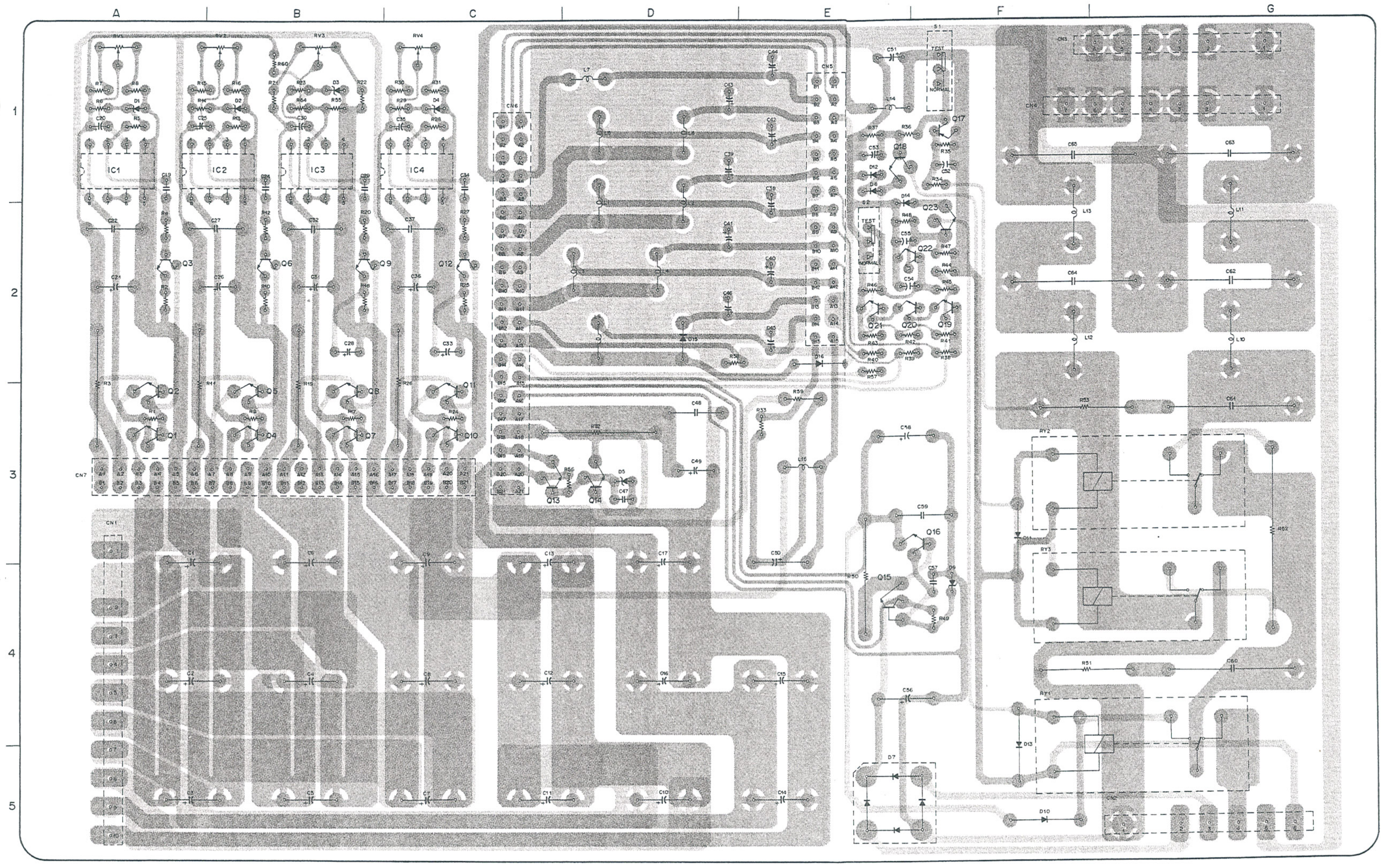
CN-13 BOARD
-SOLDERING SIDE-
1-615-213-11
CCU-360
CCU-360P


CN1
CN2
CN3
CN4
CN5

CN-14 BOARD
-SOLDERING SIDE-
1-615-214-11
CCU-360
CCU-360P

POWER SUPPLY

CN-13, 14 BOARD
FU-25 BOARD
LE-29 BOARD
PS-69, 70 BOARD
RE-18(A), 18(B) BOARD
– SOLDERING SIDE –

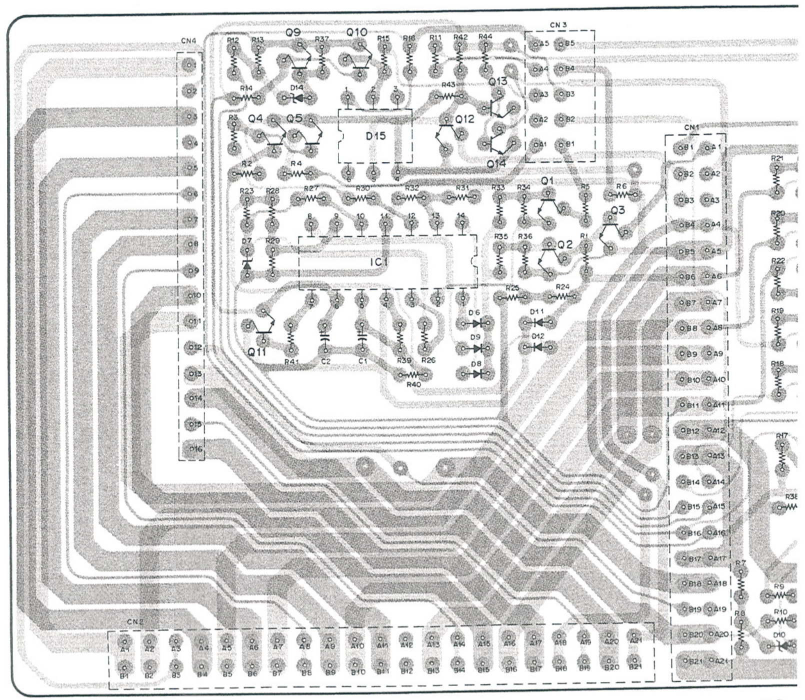


CN1	A - 4
CN2	G - 5
CN3	G - 1
CN4	G - 1
CN5	E - 1
CN6	C - 2
CN7	B - 3
D1	A - 1
D2	B - 1
D3	B - 1
D4	C - 1
D5	D - 3
D7	E - 5
D8	E - 1
D9	F - 4
D10	F - 5
D11	F - 3
D12	E - 1
D13	F - 5
D14	E - 2
D15	D - 2
D16	D - 2
IC1	A - 1
IC2	B - 1
IC3	B - 1
IC4	C - 1
Q1	A - 3
Q2	A - 3
Q3	A - 2
Q4	B - 3
Q5	B - 3
Q6	B - 2
Q7	B - 3
Q8	B - 3
Q9	B - 2
Q10	C - 3
Q11	C - 3
Q12	C - 2
Q13	C - 3
Q14	D - 3
Q15	E - 4
Q16	F - 3
Q17	F - 1
Q18	E - 1
Q19	F - 2
Q20	E - 2
Q21	E - 2
Q22	E - 2
Q23	F - 2
RV1	A - 1
RV2	B - 1
RV3	B - 1
RV4	C - 1
RY1	G - 5
RY2	G - 3
RY3	G - 4

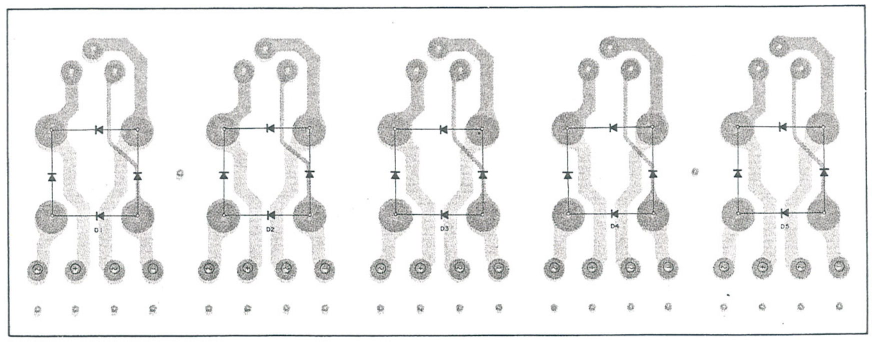
Parts No. 1-615-211-**12**

PS-69 BOARD
-SOLDERING SIDE-
1-615-211-12
CCU-360(J,UC)
CCU-360P(AE)

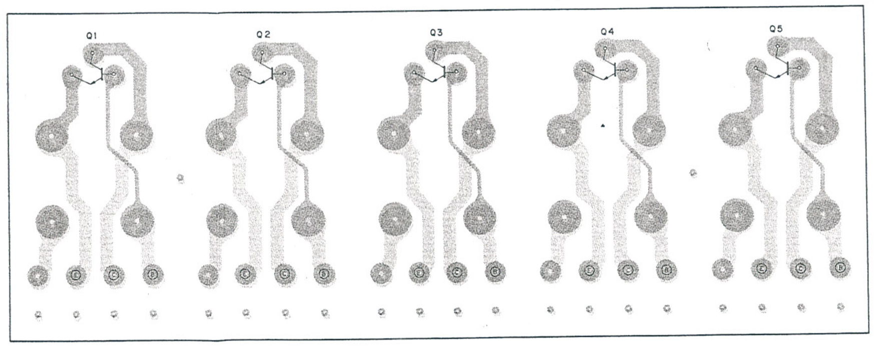
Parts No. 1-615-212-**12**



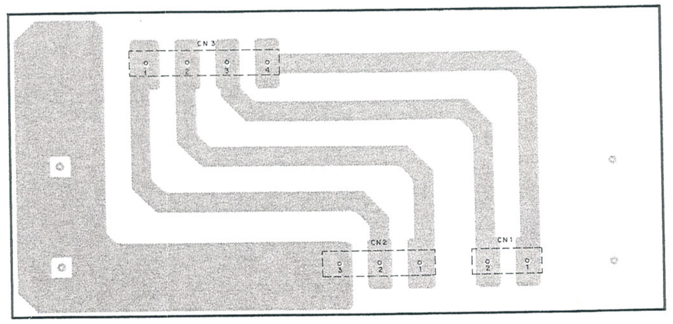
PS-
– SOLI
1-615-
CCU-36
CCU-36



RE-18(A) BOARD
–SOLDERING SIDE–
1-615-201-11
CCU-360
CCU-360P

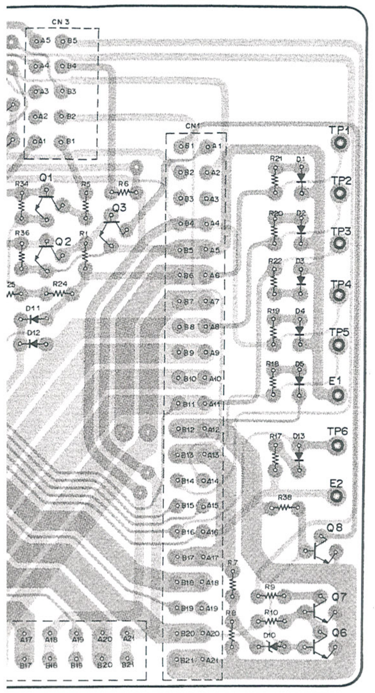


RE-18(B) BOARD
–SOLDERING SIDE–
1-615-201-11
CCU-360
CCU-360P

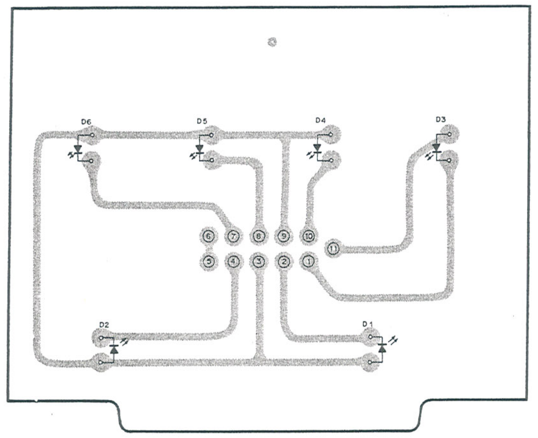


CN-13 BOARD
-SOLDERING SIDE-
1-615-213-11
CCU-360
CCU-360P

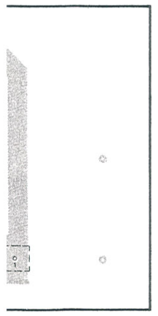
2-12


CN3
CN1
TP1
TP2
TP3
TP4
TP5
E1
TP6
E2
Q1
Q2
Q3
Q6
Q7
Q8

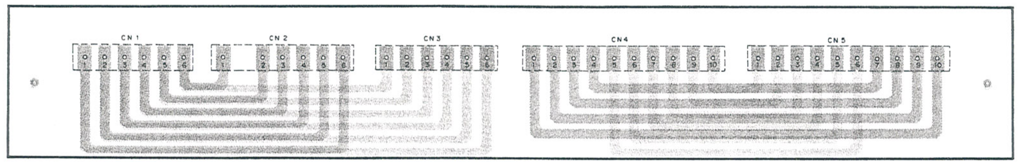
PS-70 BOARD
-SOLDERING SIDE-
1-615-212-12
CCU-360(J,UC)
CCU-360P(AE)


D6
D5
D4
D3
D2
D1

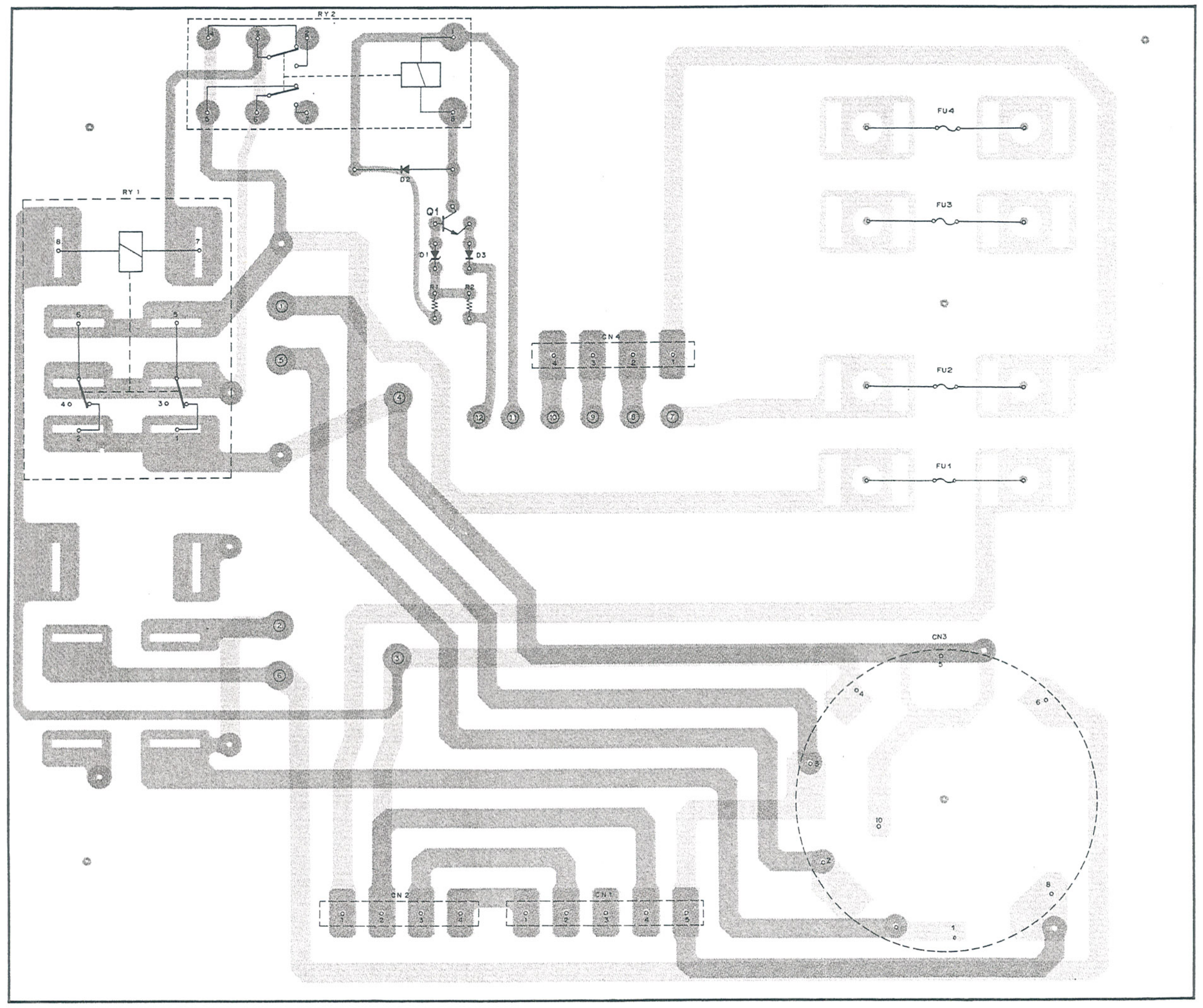
LE-29 BOARD
-SOLDERING SIDE-
1-615-200-11
CCU-360
CCU-360P



CN-13 BOARD
-SOLDERING SIDE-
1-615-213-11
CCU-360
CCU-360P

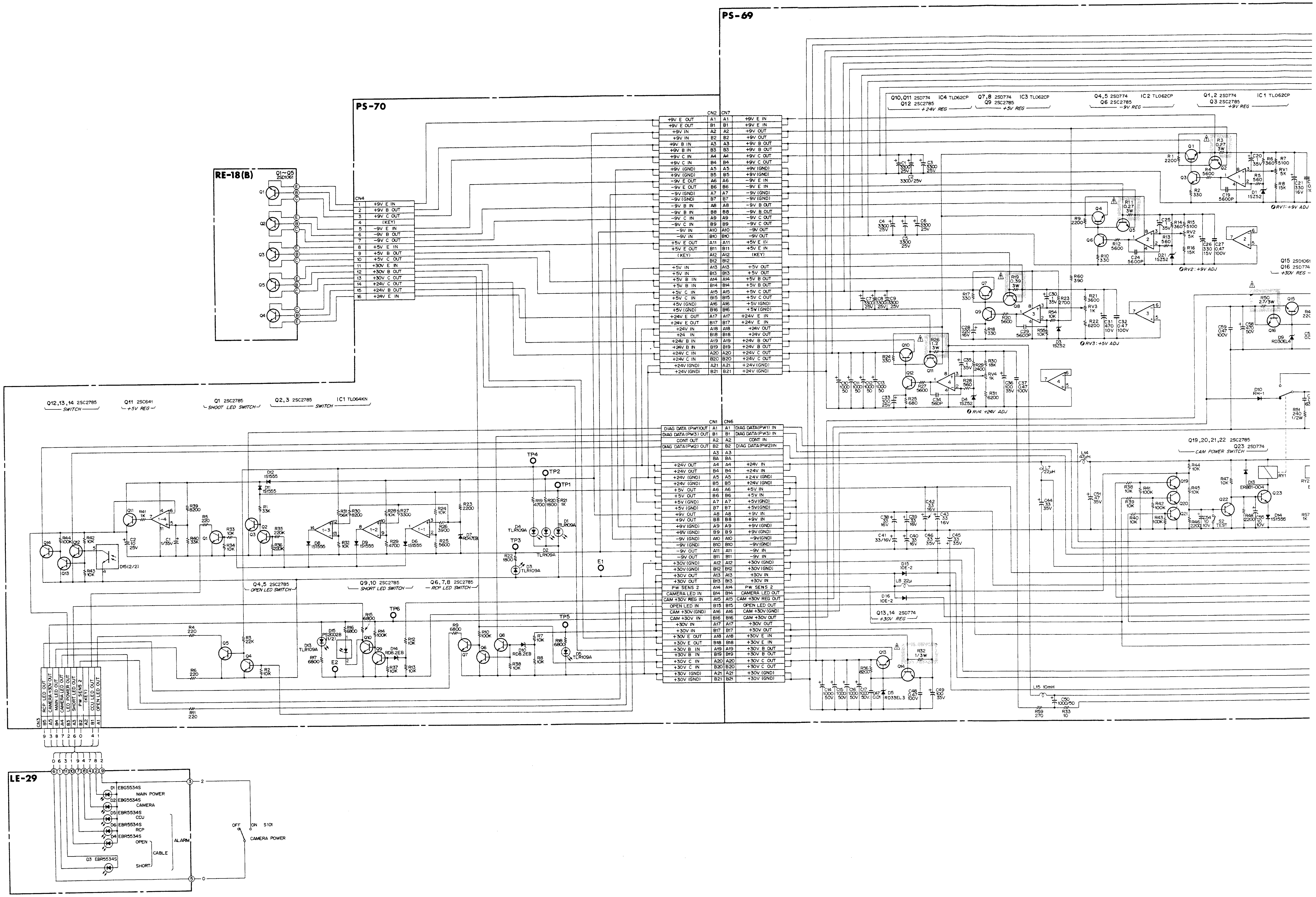

CN1
CN2
CN3
CN4
CN5

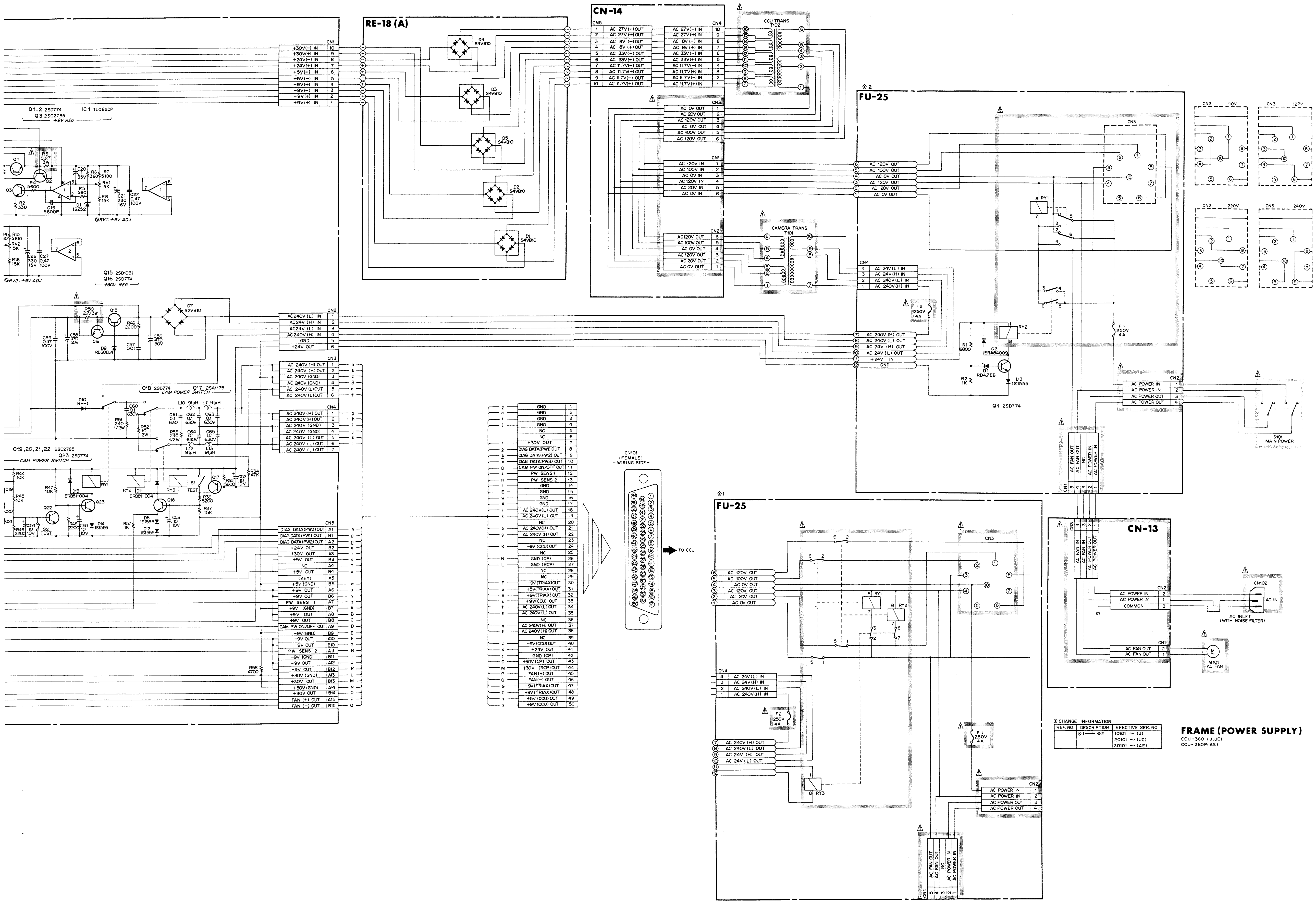
CN-14 BOARD
-SOLDERING SIDE-
1-615-214-11
CCU-360
CCU-360P


RY2
RY1
D2
Q1
D1
D3
FU4
FU3
FU2
FU1
CN4
CN3
CN2
CN1

FU-25 BOARD
-SOLDERING SIDE-
1-615-215-12
CCU-360(J,UC)
CCU-360P(AE)

POWER SUPPLY


PS-69
PS-70
RE-18(B)
LE-29
CN1
CN2
CN3
CN4
CN6
CN7
TP1
TP2
TP3
TP4
TP5
TP6
E1
E2
MAIN POWER
CAMERA
CCU
RCP
OPEN
SHORT
CABLE
ALARM
S101
CAMERA POWER
OFF
ON


RE-18 (A)
CN-14
CCU TRANS T102
CAMERA TRANS T101
※2
FU-25
※1
FU-25
CN-13
CN3 110V
CN3 127V
CN3 220V
CN3 240V
S101 MAIN POWER
CN102
AC IN
AC INLET (WITH NOISE FILTER)
M101 AC FAN
CN101 (FEMALE) - WIRING SIDE -
TO CCU
Q1,2 2SD774
Q3 2SC2785
IC1 TL062CP
+9V REG
RV1: +9V ADJ
RV2: -9V ADJ
Q15 2SD1061
Q16 2SD774
+30V REG
Q18 2SD774
Q17 2SA1175
CAM POWER SWITCH
Q19,20,21,22 2SC2785
Q23 2SD774
CAM POWER SWITCH
D1 S4VB10
D2 S4VB10
D3 S4VB10
D4 S4VB10
D5 S4VB10
D7 S2VB10
F1 250V 4A
F2 250V 4A
Q1 2SD774

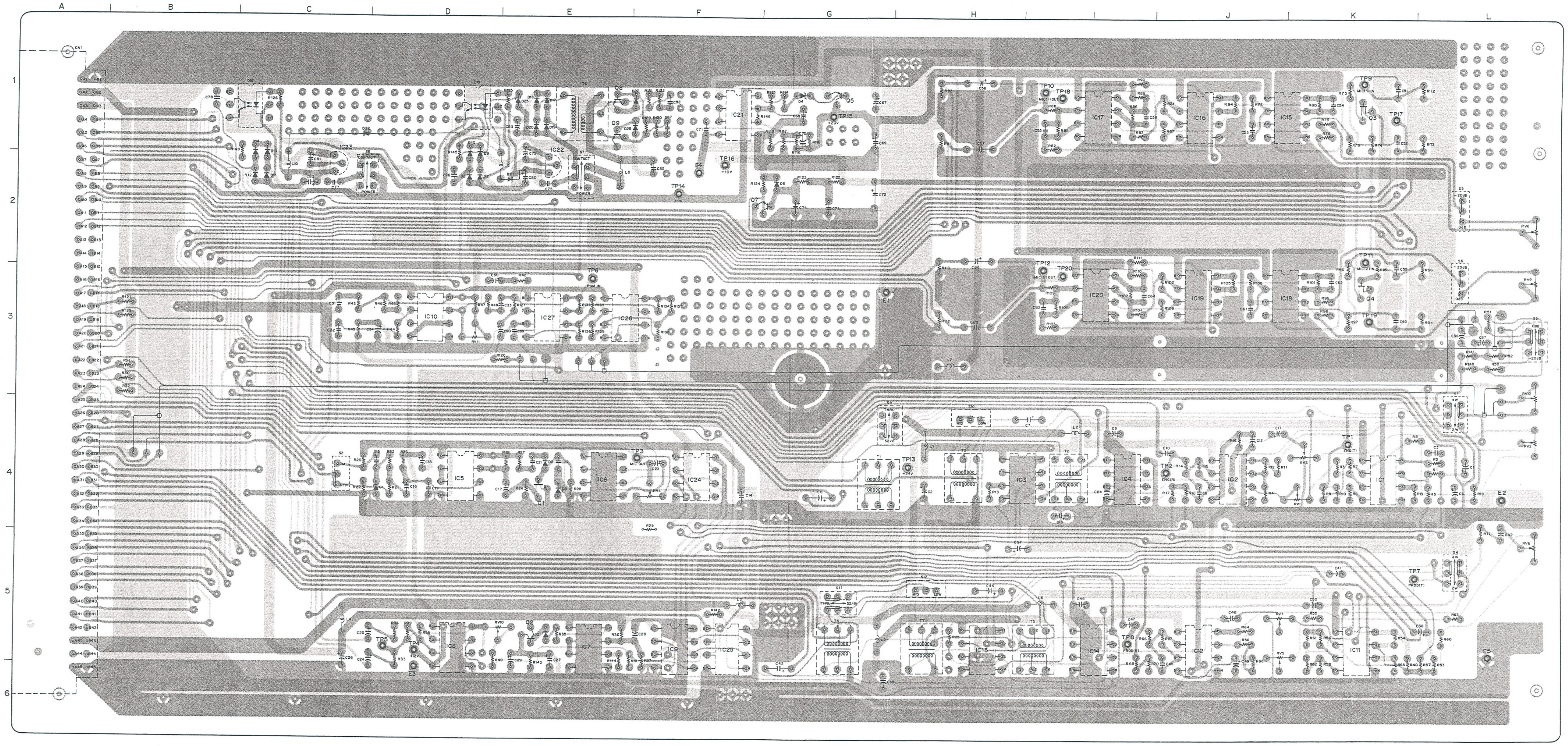
※ CHANGE INFORMATION

REF. NO.	DESCRIPTION	EFECTIVE SER. NO.
	※1 → ※2	10101 ~ (J) 20101 ~ (UC) 30101 ~ (AE)

FRAME (POWER SUPPLY)

CCU-360 (J,UC)
CCU-360P(AE)

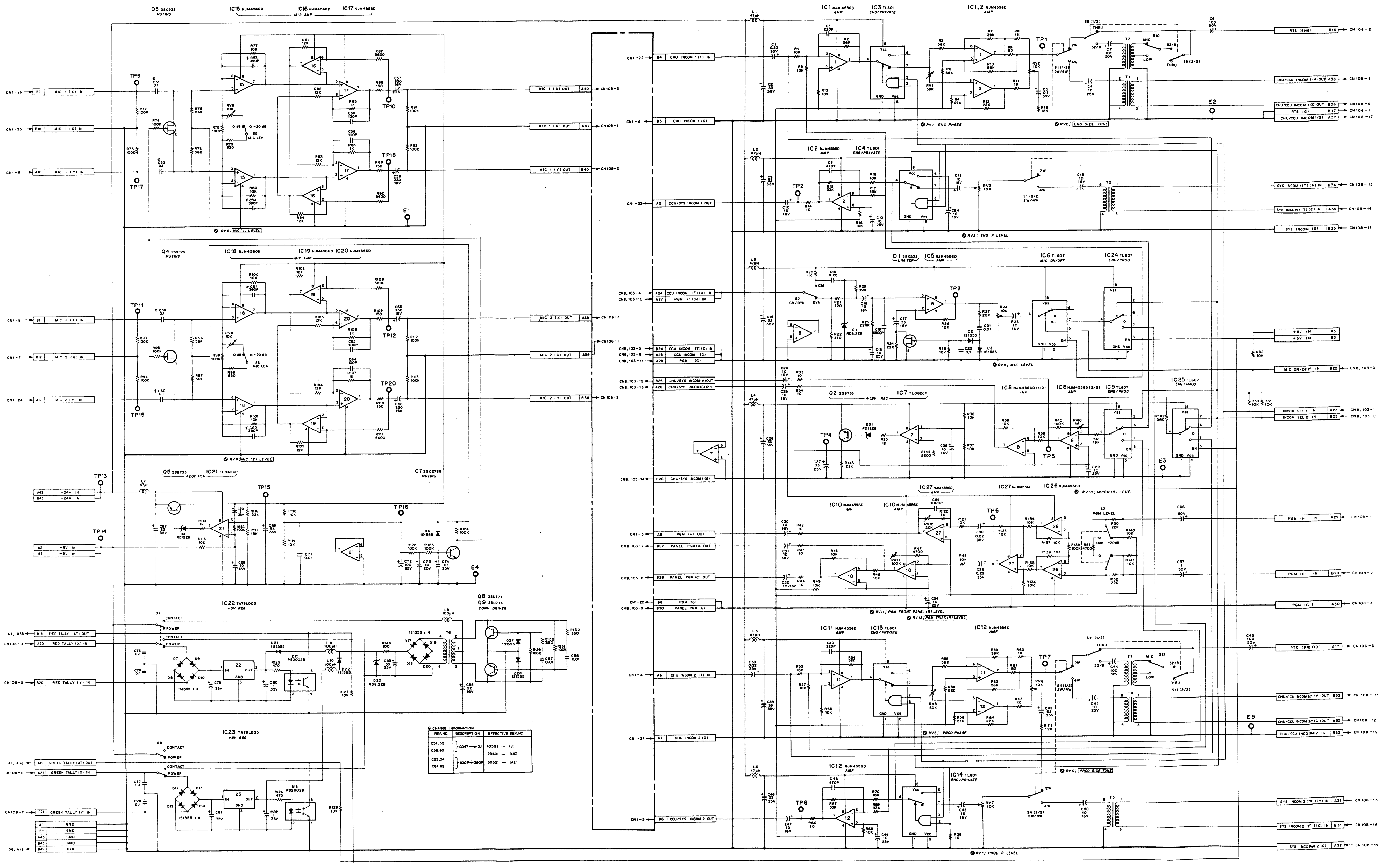
AU-58 BOARD
– SOLDERING SIDE –



D1	D · 4
D2	E · 4
D3	E · 4
D4	G · 1
D5	G · 1
D6	G · 2
D7	D · 2
D8	D · 2
D9	D · 2
D10	D · 2
D11	C · 2
D12	C · 2
D13	C · 1
D14	C · 1
D15	D · 1
D16	C · 1
D17	E · 1
D18	E · 1
D19	E · 1
D20	E · 1
D21	E · 1
D22	C · 1
D23	C · 1
D24	C · 1
D26	C · 1
D29	D · 1
D30	D · 1
D31	E · 5
E1	G · 3
E2	L · 4
E3	D · 6
E4	F · 2
E5	L · 5
IC1	K · 4
IC2	J · 4
IC3	H · 4
IC4	I · 4
IC5	D · 4
IC6	E · 4
IC7	E · 5
IC8	D · 5
IC9	F · 5
IC10	D · 3
IC11	K · 5
IC12	E · 1
IC12	J · 5
IC13	H · 5
IC14	I · 5
IC15	K · 1
IC16	J · 1
IC17	I · 1
IC18	K · 2
IC19	J · 3
IC20	I · 3
IC21	F · 1
IC22	E · 2
IC23	C · 2
IC26	E · 3
IC27	E · 3
Q1	E · 4
Q2	E · 5
Q3	K · 1
Q4	K · 2
Q5	G · 1
Q7	G · 2
Q8	E · 1
Q9	E · 1
RV1	K · 4
RV2	L · 4
RV3	K · 4
RV4	F · 4
RV5	J · 5
RV6	L · 5
RV7	L · 5
RV8	L · 2
RV9	L · 3
RV10	D · 5
RV11	D · 3
RV12	L · 3
S1	L · 4
S2	C · 4
S3	E · 3
S4	L · 5
S5	L · 2
S6	L · 3
S7	E · 2
S8	C · 2
S9	G · 4
S10	H · 4
S11	G · 5
S12	H · 5
TP1	K · 4
TP2	J · 4
TP3	F · 4
TP4	D · 5
TP5	D · 5
TP6	E · 3
TP7	L · 5
TP8	I · 5
TP9	K · 1
TP10	I · 1
TP11	K · 2
TP12	I · 3
TP13	H · 4
TP14	F · 2
TP15	G · 1
TP16	F · 2
TP17	K · 1
TP18	I · 1
TP19	K · 3
TP20	I · 3

AU-58 BOARD
-SOLDERING SIDE-
1-615-206-13
CCU-360(UC,J)
CCU-360P(AE)

AU-58 BOARD


Q3 2SK523 MUTING
IC15 NJM4560D
IC16 NJM4560D
IC17 NJM4556D
MIC AMP
MIC 1 (X) IN
MIC 1 (G) IN
MIC 1 (Y) IN
MIC 1 (X) OUT
MIC 1 (G) OUT
MIC 1 (Y) OUT
RV8: MIC (1) LEVEL
Q4 2SK125 MUTING
IC18 NJM4560D
IC19 NJM4560D
IC20 NJM4556D
MIC 2 (X) IN
MIC 2 (G) IN
MIC 2 (Y) IN
MIC 2 (X) OUT
MIC 2 (G) OUT
MIC 2 (Y) OUT
RV9: MIC (2) LEVEL
Q5 2SB733
IC21 TL062CP
+20V REG
Q7 2SC2785 MUTING
+24V IN
+9V IN
IC22 TA78L005 +5V REG
IC23 TA78L005 +5V REG
Q8 2SD774
Q9 2SD774
CONV DRIVER
RED TALLY (AT) OUT
RED TALLY (X) IN
RED TALLY (Y) IN
GREEN TALLY (AT) OUT
GREEN TALLY (X) IN
GREEN TALLY (Y) IN
GND
DIA
IC1 NJM4556D AMP
IC3 TL601 ENG/PRIVATE
IC1, 2 NJM4556D AMP
CHU INCOM 1 (T) IN
CHU INCOM 1 (G)
RV1: ENG PHASE
RV2: ENG SIDE TONE
RTS (ENG)
CHU/CCU INCOM 1 (H) OUT
CHU/CCU INCOM 1 (C) OUT
RTS (G)
CHU/CCU INCOM 1 (G)
IC2 NJM4556D AMP
IC4 TL601 ENG/PRIVATE
CCU/SYS INCOM 1 OUT
RV3: ENG R LEVEL
SYS INCOM 1 (T) (R) IN
SYS INCOM 1 (T) (C) IN
SYS INCOM (G)
Q1 2SK523 LIMITER
IC5 NJM4556D AMP
IC6 TL607 MIC ON/OFF
IC24 TL607 ENG/PROD
CCU INCOM (T) (H) IN
PGM (T) (H) IN
CCU INCOM (T) (C) IN
CCU INCOM (G)
PGM (G)
CCU/SYS INCOM (H) OUT
CCU/SYS INCOM (C) OUT
RV4: MIC LEVEL
+5V IN
MIC ON/OFF IN
Q2 2SB733
IC7 TL062CP
+12V REG
IC8 NJM4556D (1/2) INV
IC8 NJM4556D (2/2) AMP
IC9 TL607 ENG/PROD
IC25 TL607 ENG/PROD
INCOM SEL 1 IN
INCOM SEL 2 IN
CHU/SYS INCOM (G)
RV10: INCOM (R) LEVEL
IC10 NJM4556D INV
IC10 NJM4556D AMP
IC27 NJM4556D AMP
IC27 NJM4556D
IC26 NJM4556D
S3 PGM LEVEL
PGM (H) OUT
PANEL PGM (H) OUT
PANEL PGM (C) OUT
PGM (G)
PANEL PGM (G)
PGM (H) IN
PGM (C) IN
RV11: PGM FRONT PANEL (R) LEVEL
RV12: PGM TRIAX (R) LEVEL
IC11 NJM4556D AMP
IC13 TL601 ENG/PRIVATE
IC12 NJM4556D AMP
CHU INCOM 2 (T) IN
CHU INCOM 2 (G)
RV5: PROD PHASE
RV6: PROD SIDE TONE
RTS (PROD)
CHU/CCU INCOM 2 (H) OUT
CHU/CCU INCOM 2 (C) OUT
CHU/CCU INCOM 2 (G)
IC14 TL601 ENG/PRIVATE
CCU/SYS INCOM 2 OUT
RV7: PROD R LEVEL
SYS INCOM 2 (T) (H) IN
SYS INCOM 2 (T) (C) IN
SYS INCOM 2 (G)
TP1
TP2
TP3
TP4
TP5
TP6
TP7
TP8
TP9
TP10
TP11
TP12
TP13
TP14
TP15
TP16
TP17
TP18
TP19
TP20
E1
E2
E3
E4
E5

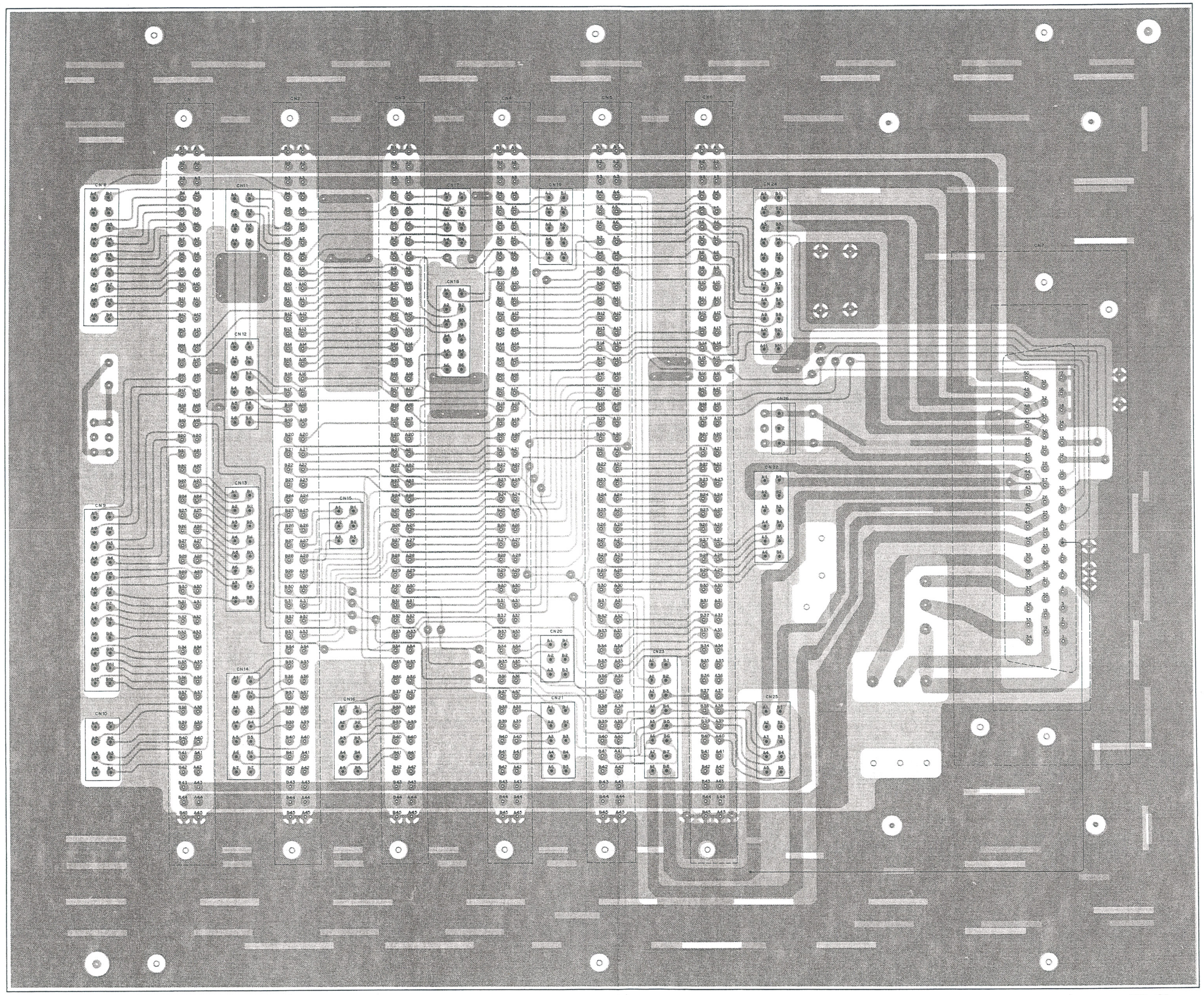
※ CHANGE INFORMATION

REF.NO.	DESCRIPTION	EFFECTIVE SER.NO.
C51, 52 C59, 60	0.047 → 0.1	10301 ~ (J)
		20401 ~ (UC)
C53, 54 C61, 62	820P → 390P	30301 ~ (AE)

AU-58
CCU-360 (J, UC)
CCU-360P (AE)

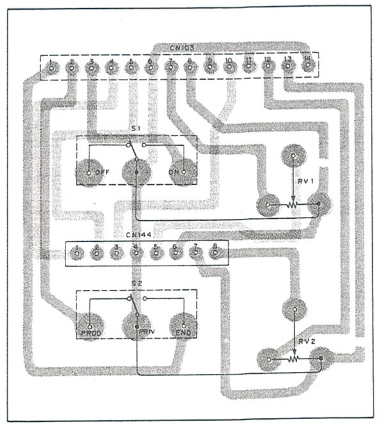
MB-91 BOARD
CNB-3 BOARD
– SOLDERING SIDE –

Parts No. 1-615-202-**11**



MB-91 BOARD
—SOLDERING SIDE—
1-615-202-11
CCU-360(J,UC)
CCU-360P(AE)

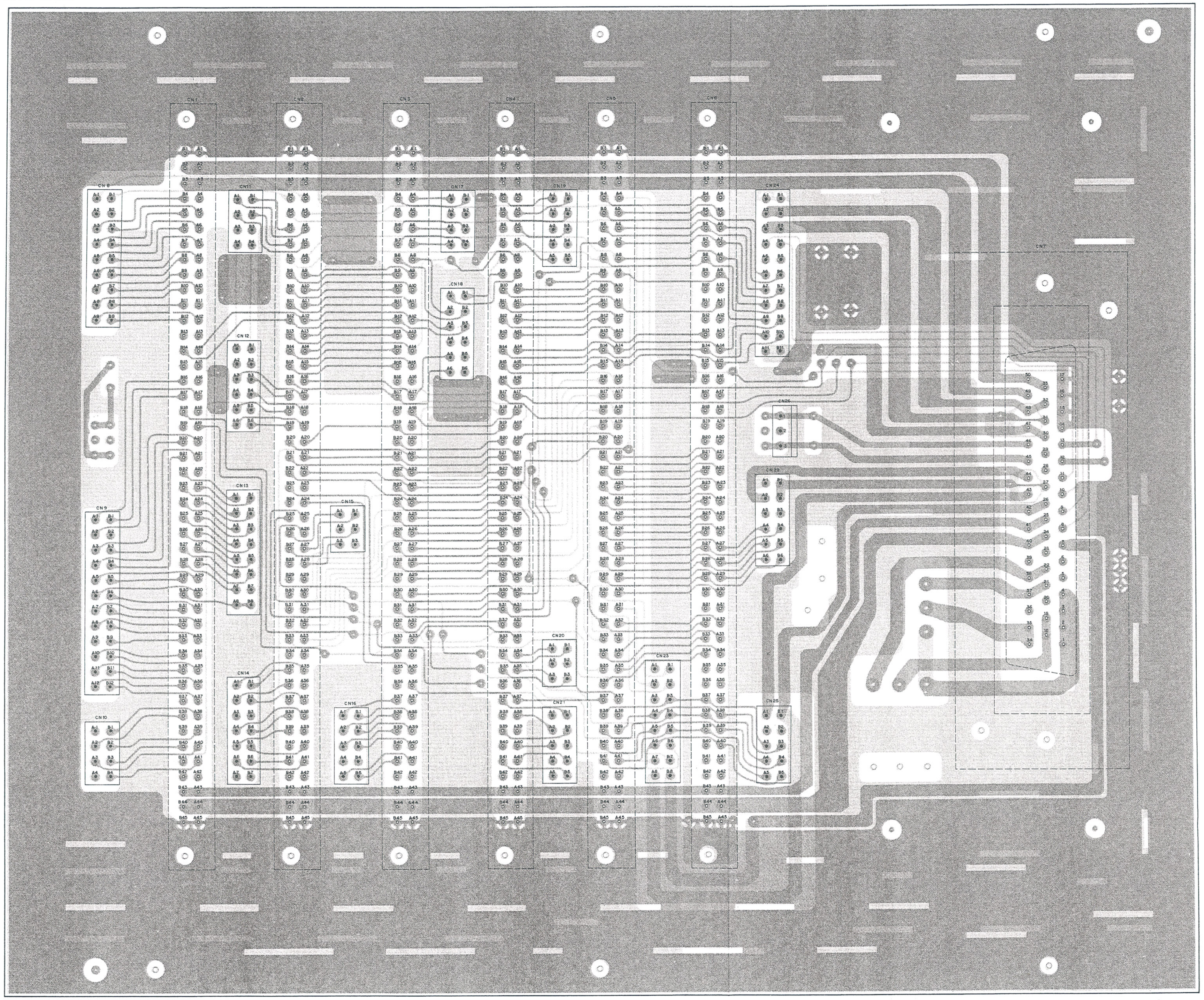
Parts No. 1-615-210-**11**


CN103
1
2
3
4
5
6
7
8
9
10
11
12
13
14
S1
OFF
ON
RV1
CN144
S2
PROD
PRIV
END
RV2

CNB-3 BOARD
—SOLDERING SIDE—
1-615-210-11
CCU-360 (UC,J)
CCU-360P(AE)

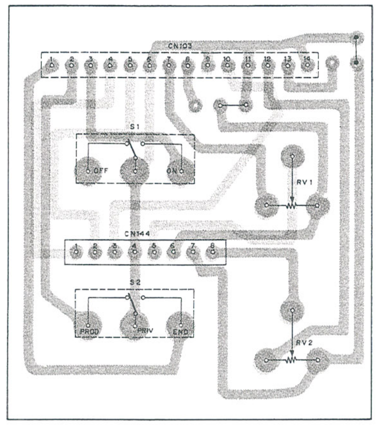
MB-91 BOARD
CNB-3 BOARD
– SOLDERING SIDE –

Parts No. 1-615-202-**12**


CN1
CN2
CN3
CN4
CN5
CN6
CN7
CN8
CN9
CN10
CN11
CN12
CN13
CN14
CN15
CN16
CN17
CN18
CN19
CN20
CN21
CN22
CN23
CN24
CN25
CN26

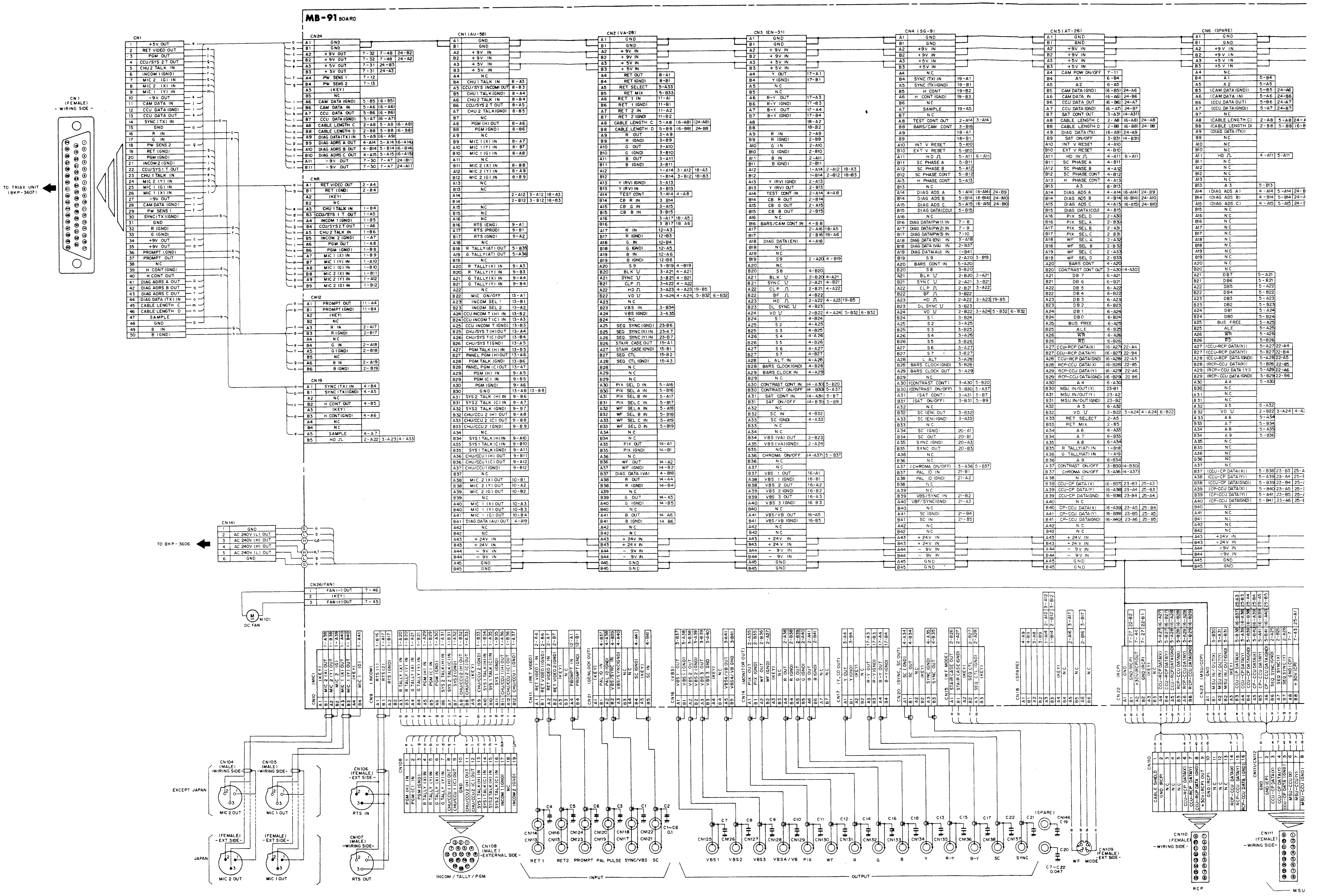
MB-91 BOARD
–SOLDERING SIDE–
1-615-202-12
CCU-360(J,UC)
CCU-360P(AE)

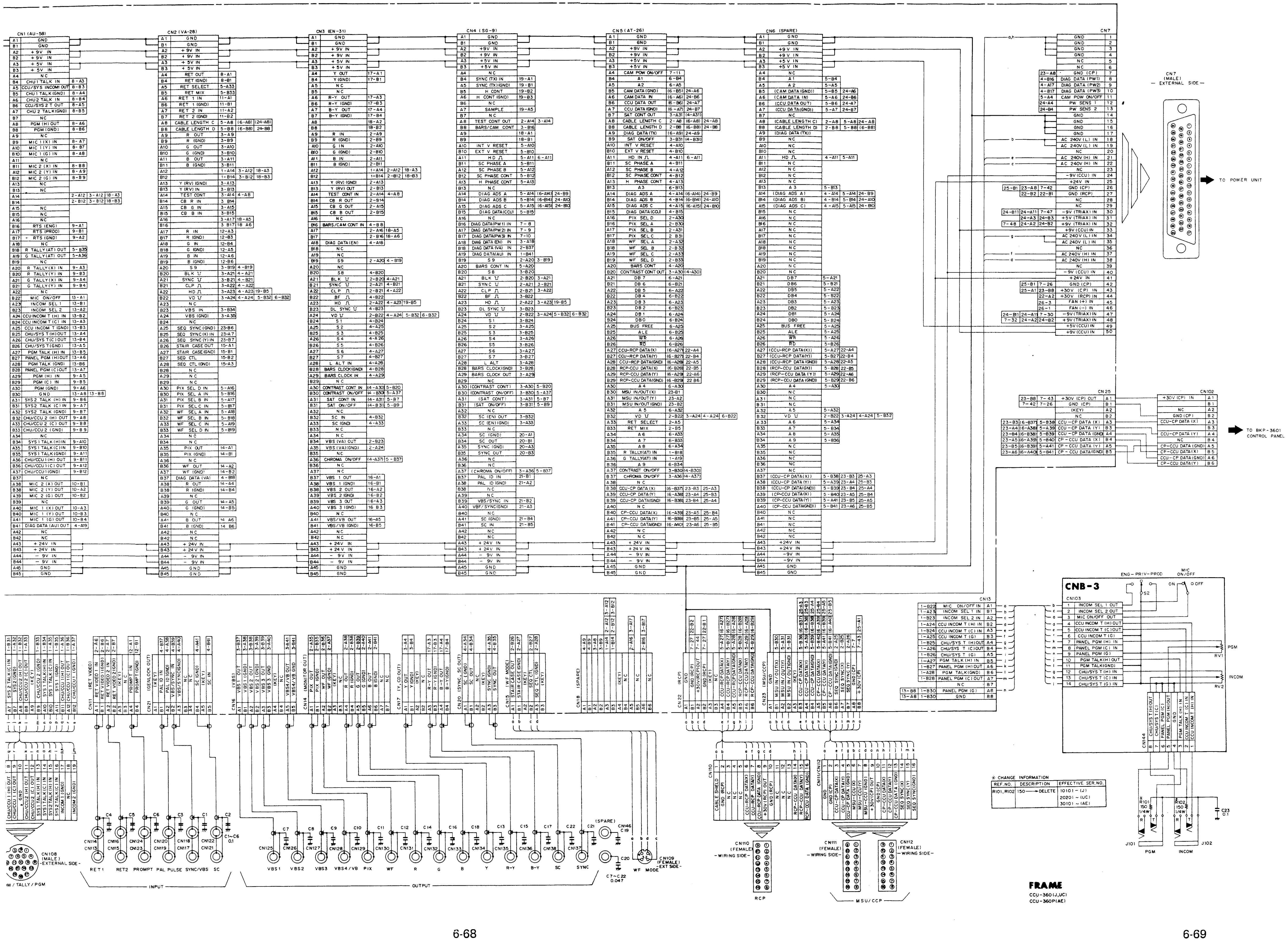
Parts No. 1-615-210-**12**


CN103
1
2
3
4
5
6
7
8
9
10
11
12
13
14
S1
OFF
ON
RV1
CN144
1
2
3
4
5
6
7
8
S2
PROD
PRIV
END
RV2

CNB-3 BOARD
–SOLDERING SIDE–
1-615-210-12
CCU-360 (UC,J)
CCU-360P(AE)

FRAME


MB-91 BOARD
CN1
CN1 (FEMALE) - WIRING SIDE -
TO TRIAX UNIT (BKP-3607)
CN24
CN8
CN12
CN19
CN1 (AU-58)
CN2 (VA-28)
CN3 (EN-31)
CN4 (SG-9)
CN5 (AT-26)
CN6 (SPARE)
CN141
TO BKP-3606
CN26 (FAN)
M101 DC FAN
CN10
CN9
CN11
CN21
CN16
CN14
CN17
CN20
CN15
CN18
CN22
CN23
CN104 (MALE) -WIRING SIDE-
CN105 (MALE) -WIRING SIDE-
EXCEPT JAPAN
MIC 2 OUT
MIC 3 OUT
(FEMALE) -EXT SIDE-
JAPAN
MIC 1 OUT
CN106 (FEMALE) -EXT SIDE-
RTS IN
CN107 (MALE) -WIRING SIDE-
RTS OUT
CN108
CN108 (MALE) -EXTERNAL SIDE-
INCOM / TALLY / PGM
CN114
CN113
CN116
CN115
CN124
CN123
CN120
CN119
CN118
CN117
CN122
CN121
C1~C6 0.1
RET 1
RET 2
PROMPT
PAL PULSE
SYNC/VBS
SC
INPUT
CN125
CN126
CN127
CN128
CN129
CN130
CN131
CN132
CN133
CN134
CN135
CN136
CN138
CN137
VBS 1
VBS 2
VBS 3
VBS 4 / VB
PIX
WF
R
G
B
Y
R-Y
B-Y
SC
SYNC
OUTPUT
C7~C22 0.047
(SPARE)
CN146
C19
C20
CN109 (FEMALE) -EXT SIDE-
WF MODE
CN110 (FEMALE) -WIRING SIDE-
RCP
CN111 (FEMALE) -WIRING SIDE-
MSU


CN1 (AU-58)
CN2 (VA-28)
CN3 (EN-31)
CN4 (SG-9)
CN5 (AT-26)
CN6 (SPARE)
CN7
CN7 (MALE) – EXTERNAL SIDE –
TO POWER UNIT
CN25
CN102
TO BKP-3601 CONTROL PANEL
CNB-3
CN103
ENG-PRIV-PROD
MIC ON/OFF
ON
OFF
S2
PGM
INCOM
RV1
RV2
CN13
CN144
R101 150 1/4W
R102 150 1/4W
C23 0.1
J101
J102
PGM
INCOM
CN11
CN21
CN16
CN14
CN17
CN20
CN18 (SPARE)
CN22
CN23
CN108 (MALE) -EXTERNAL SIDE-
/ TALLY / PGM
CN114
CN113
CN116
CN115
CN124
CN123
CN120
CN119
CN118
CN117
CN122
CN121
C1~C6 0.1
RET 1
RET2
PROMPT
PAL PULSE
SYNC/VBS
SC
INPUT
CN125
CN126
CN127
CN128
CN129
CN130
CN131
CN132
CN133
CN134
CN135
CN136
CN138
CN137
VBS1
VBS2
VBS3
VBS4/VB
PIX
WF
R
G
B
Y
R-Y
B-Y
SC
SYNC
OUTPUT
(SPARE)
CN146
C19
C20
C21
C7~C22 0.047
CN109 (FEMALE) -EXT SIDE-
WF MODE
CN110
CN110 (FEMALE) - WIRING SIDE -
RCP
CN111/CN112
CN111 (FEMALE) - WIRING SIDE -
CN112 (FEMALE) - WIRING SIDE -
MSU/CCP

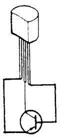
※ CHANGE INFORMATION

REF.NO.	DESCRIPTION	EFFECTIVE SER.NO.
R101, R102	150 → DELETE	10101 ~ (J) 20201 ~ (UC) 30101 ~ (AE)

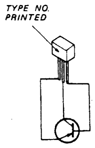
FRAME

CCU-360(J,UC)
CCU-360P(AE)

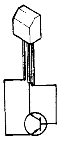
SECTION 7
SEMICONDUCTOR ELECTRODES



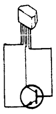
2SA1005


TYPE NO.
PRINTED

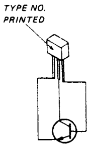
2SA1175



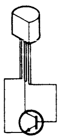
2SB733



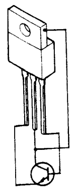
2SC2668
2SC2669


TYPE NO.
PRINTED

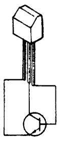
2SC2785
2SC2787



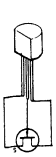
2SC641K



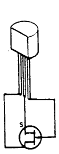
2SD1061



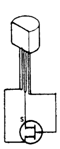
2SD774



2SK125

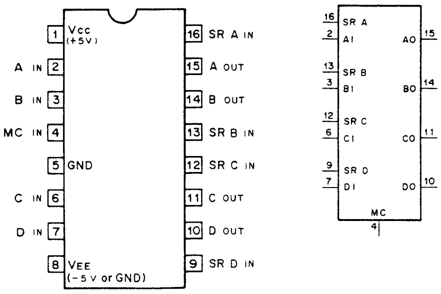


2SK152



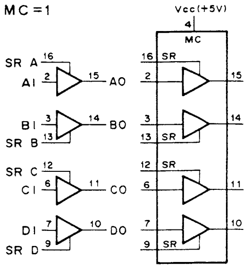
2SK523

AM26LS30PC (ADVANCED MICRO DEVICES)
LINE DRIVER
— TOP VIEW —

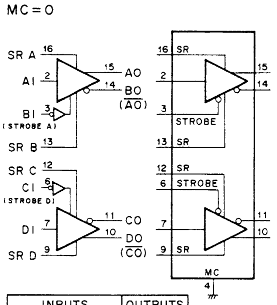

1 Vcc (+5V)
A IN 2
B IN 3
MC IN 4
5 GND
C IN 6
D IN 7
8 VEE (-5 V or GND)
16 SR A IN
15 A OUT
14 B OUT
13 SR B IN
12 SR C IN
11 C OUT
10 D OUT
9 SR D IN
16 SR A
2 AI
AO 15
13 SR B
3 BI
BO 14
12 SR C
6 CI
CO 11
9 SR D
7 DI
DO 10
MC
4

MC : MODE CONTROL
SR : SLEW RATE CONTROL

MC=1


Vcc(+5V)
4
MC
SR A 16
AI 2
15 AO
BI 3
14 BO
SR B 13
SR C 12
CI 6
11 CO
DI 7
10 DO
SR D 9
16 SR
2
15
3
14
13 SR
12 SR
6
11
7
10
9 SR

MC=0

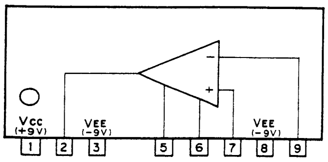

SR A 16
AI 2
15 AO
14 BO
(AO)
BI 3
(STROBE A)
SR B 13
SR C 12
CI 6
(STROBE D)
11 CO
10 DO
(CO)
DI 7
SR D 9
16 SR
2
15
14
3 STROBE
13 SR
12 SR
6 STROBE
11
10
7
9 SR
MC
4

INPUTS		OUTPUTS
MC	A TO D	A TO D
1	0	0
1	1	1

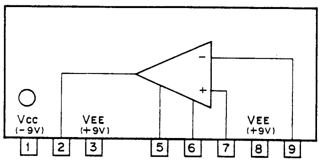
INPUTS			OUTPUTS	
MC	STROBE	A & D	A & D	B & C
0	0	0	0	1
0	0	1	1	0
0	1	X	HI-Z	HI-Z

0 ; LOW LEVEL X;DON'T CARE
1 ; HIGH LEVEL HI-Z;HIGH IMPEDANCE

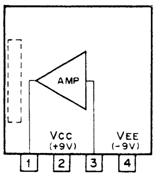
BX1304 (SONY)
VIDEO AMPLIFIER
— PRINTED SIDE —


Vcc (+9V)
VEE (-9V)
VEE (-9V)
-
+
1
2
3
5
6
7
8
9

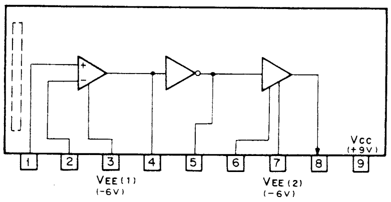
BX1305 (SONY)
VIDEO AMPLIFIER
— PRINTED SIDE —


Vcc (-9V)
VEE (+9V)
VEE (+9V)
-
+
1
2
3
5
6
7
8
9

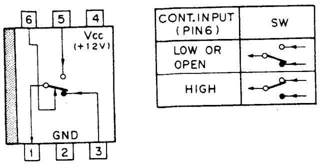
BX1319 (SONY)
HYBRID VIDEO AMPLIFIER
— REAR VIEW —


AMP
Vcc (+9V)
VEE (-9V)
1
2
3
4

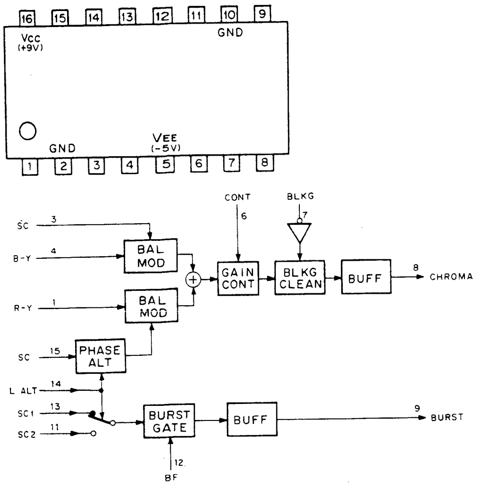
BX315 (SONY)
VIDEO OUTPUT AMPLIFIER (PHASE INVERTED)
— REAR VIEW —


+
-
Vcc (+9V)
1
2
3
4
5
6
7
8
9
VEE (1) (-6V)
VEE (2) (-6V)

CX130 (SONY)
ANALOG SWITCH
— TOP VIEW —

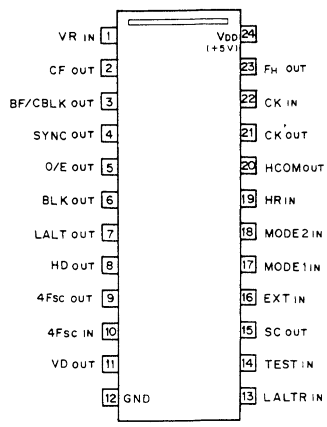

6
5
4
Vcc
(+12V)
GND
1
2
3
CONT.INPUT (PIN6)
SW
LOW OR OPEN
HIGH

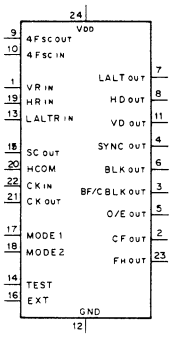
CX22017 (SONY)
VIDEO SIGNAL PROCESSOR
— TOP VIEW —


16
15
14
13
12
11
10
9
Vcc
(+9V)
GND
GND
VEE
(-5V)
1
2
3
4
5
6
7
8
CONT
6
BLKG
7
SC
3
B-Y
4
R-Y
1
BAL MOD
BAL MOD
GAIN CONT
BLKG CLEAN
BUFF
8
CHROMA
SC
15
PHASE ALT
L ALT
14
SC1
13
SC2
11
BURST GATE
BUFF
9
BURST
12
BF

CX773A (SONY)

C-MOS SYNC GENERATOR (NTSC, PAL-M, PAL, SECAM)
— TOP VIEW —


VR IN 1
CF OUT 2
BF/CBLK OUT 3
SYNC OUT 4
O/E OUT 5
BLK OUT 6
LALT OUT 7
HD OUT 8
4Fsc OUT 9
4Fsc IN 10
VD OUT 11
12 GND
VDD (+5V) 24
23 FH OUT
22 CK IN
21 CK OUT
20 HCOM OUT
19 HR IN
18 MODE 2 IN
17 MODE 1 IN
16 EXT IN
15 SC OUT
14 TEST IN
13 LALTR IN


24
VDD
9 4Fsc OUT
10 4Fsc IN
1 VR IN
19 HR IN
13 LALTR IN
15 SC OUT
20 HCOM
22 CK IN
21 CK OUT
17 MODE 1
18 MODE 2
14 TEST
16 EXT
GND
12
LALT OUT 7
HD OUT 8
VD OUT 11
SYNC OUT 4
BLK OUT 6
BF/CBLK OUT 3
O/E OUT 5
CF OUT 2
FH OUT 23

O/E : ODD/EVEN FIELD
CF : COLOR FRAME PULSE
HCOM : H COMPARATOR

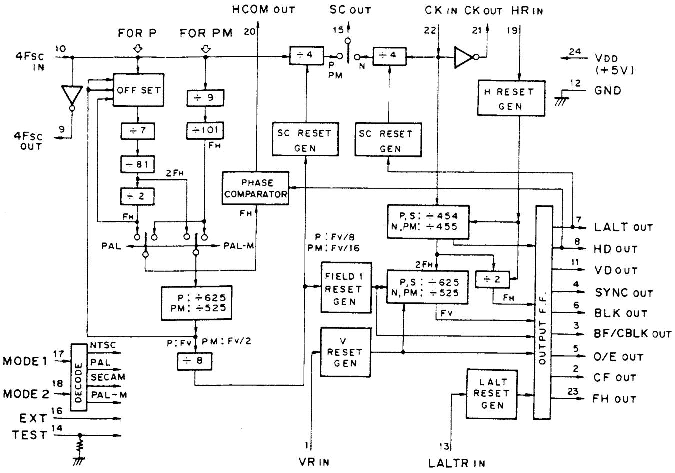
SYSTEM	4Fsc	CLOCK
NTSC	910 FH	910 FH
PAL	1135 FH+2Fv	908 FH
PALM	909 FH	910 FH
SECAM	———	908 FH

INPUTS		SYSTEM
MODE 1	MODE 2	
0	0	NTSC
0	1	SECAM
1	0	PALM
1	1	PAL

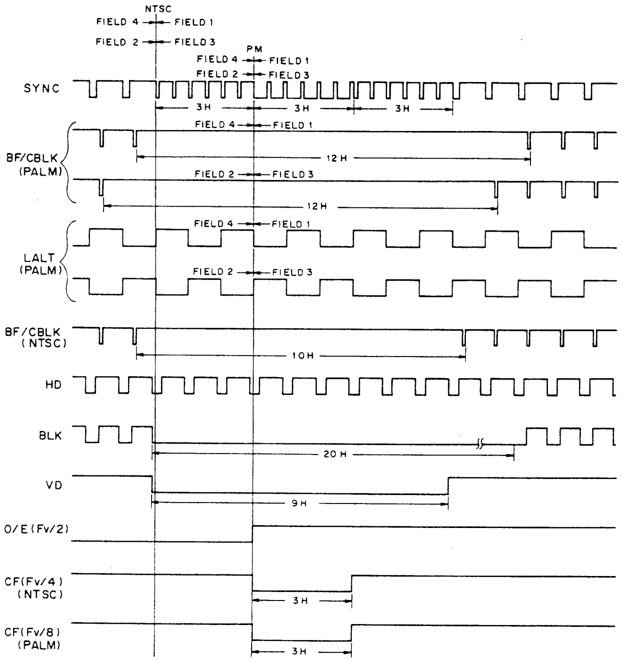
0 ; LOW LEVEL (GND)
1 ; HIGH LEVEL (VDD)

INPUTS		FUNCTION
EXT	TEST	
0	0	INTERNAL
0	1	INVALID
1	0	EXT
1	1	TEST

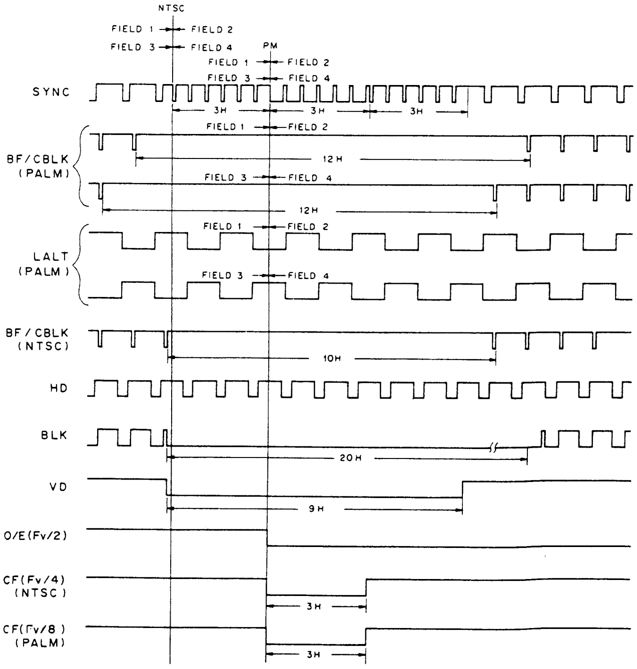
TEST "0" : OPEN
(INTERNALLY PULLED DOWN)

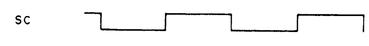

HCOM OUT
SC OUT
CK IN
CK OUT
HR IN
FOR P
FOR PM
4Fsc IN 10
4Fsc OUT 9
OFF SET
÷9
÷7
÷101
FH
÷81
2FH
÷2
FH
PAL
PAL-M
PHASE COMPARATOR
FH
P : ÷625
PM : ÷525
P : Fv
PM : Fv/2
÷8
÷4
P
PM
N
÷4
SC RESET GEN
SC RESET GEN
H RESET GEN
P, S : ÷454
N, PM : ÷455
P : Fv/8
PM : Fv/16
FIELD 1 RESET GEN
2FH
P, S : ÷625
N, PM : ÷525
÷2
FH
Fv
V RESET GEN
LALT RESET GEN
OUTPUT F.F.
VDD (+5V) 24
GND 12
7 LALT OUT
8 HD OUT
11 VD OUT
4 SYNC OUT
6 BLK OUT
3 BF/CBLK OUT
5 O/E OUT
2 CF OUT
23 FH OUT
MODE 1 17
MODE 2 18
EXT 16
TEST 14
DECODE
NTSC
PAL
SECAM
PAL-M
1 VR IN
13 LALTR IN
20
15
22
21
19

NTSC, PAL-M (FIELD 1, 3)

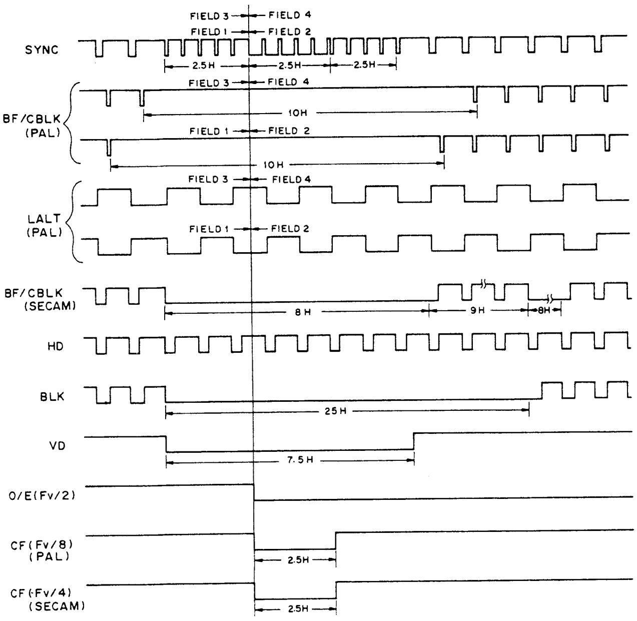

NTSC
FIELD 4 → FIELD 1
FIELD 2 → FIELD 3
PM
FIELD 4 → FIELD 1
FIELD 2 → FIELD 3
SYNC
3H
3H
3H
BF/CBLK (PALM)
FIELD 4 → FIELD 1
12H
FIELD 2 → FIELD 3
12H
LALT (PALM)
FIELD 4 → FIELD 1
FIELD 2 → FIELD 3
BF/CBLK (NTSC)
10H
HD
BLK
20H
VD
9H
O/E (Fv/2)
CF (Fv/4) (NTSC)
3H
CF (Fv/8) (PALM)
3H

NTSC, PAL-M (FIELD 2, 4)

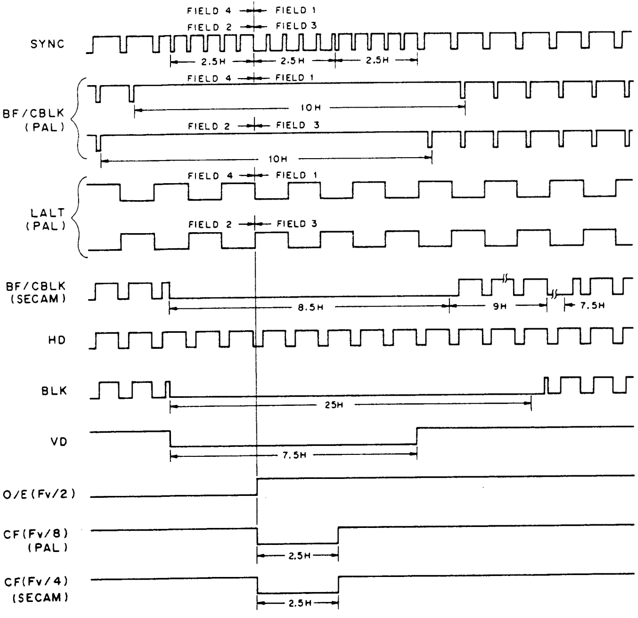

NTSC
FIELD 1 → FIELD 2
FIELD 3 → FIELD 4
PM
FIELD 1 → FIELD 2
FIELD 3 → FIELD 4
SYNC
3H
3H
3H
BF/CBLK (PALM)
FIELD 1 → FIELD 2
12H
FIELD 3 → FIELD 4
12H
LALT (PALM)
FIELD 1 → FIELD 2
FIELD 3 → FIELD 4
BF/CBLK (NTSC)
10H
HD
BLK
20H
VD
9H
O/E (Fv/2)
CF (Fv/4) (NTSC)
3H
CF (Fv/8) (PALM)
3H

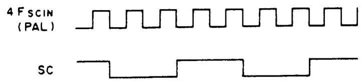

CK IN, 4Fsc IN (NTSC)(PALM)
SC

PAL, SECAM (FIELD 4,2)

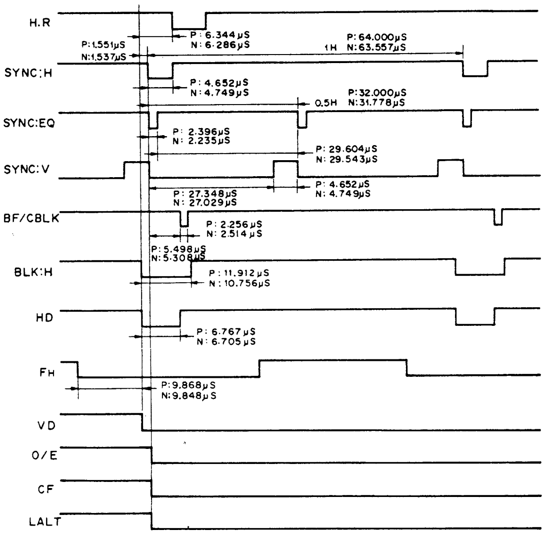

FIELD 3
FIELD 4
FIELD 1
FIELD 2
SYNC
2.5H
BF/CBLK (PAL)
10H
LALT (PAL)
BF/CBLK (SECAM)
8H
9H
HD
BLK
25H
VD
7.5H
O/E(Fv/2)
CF(Fv/8) (PAL)
CF(Fv/4) (SECAM)

PAL, SECAM (FIELD1,3)

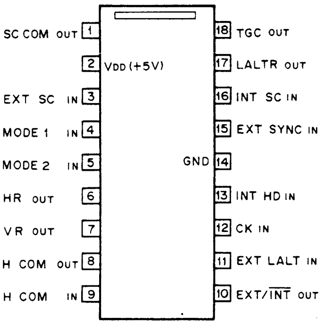

FIELD 4
FIELD 1
FIELD 2
FIELD 3
SYNC
2.5H
BF/CBLK (PAL)
10H
LALT (PAL)
BF/CBLK (SECAM)
8.5H
9H
7.5H
HD
BLK
25H
VD
O/E(Fv/2)
CF(Fv/8) (PAL)
CF(Fv/4) (SECAM)

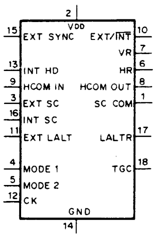

4FSCIN (PAL)
SC

P: PAL, SECAM
N: NTSC, PALM


H.R
P: 6.344μS
N: 6.286μS
P:1.551μS
N:1.537μS
1H
P: 64.000μS
N: 63.557μS
SYNC:H
P: 4.652μS
N: 4.749μS
0.5H
P:32.000μS
N:31.778μS
SYNC:EQ
P: 2.396μS
N: 2.235μS
P: 29.604μS
N: 29.543μS
SYNC:V
P: 27.348μS
N: 27.029μS
P: 4.652μS
N: 4.749μS
BF/CBLK
P: 2.256μS
N: 2.514μS
P: 5.498μS
N: 5.308μS
BLK:H
P: 11.912μS
N: 10.756μS
HD
P: 6.767μS
N: 6.705μS
FH
P:9.868μS
N:9.848μS
VD
O/E
CF
LALT

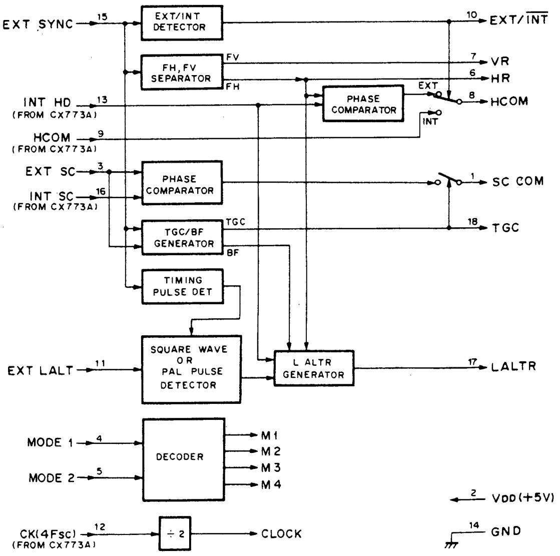
CX7903 (SONY)
C-MOS GENLOCK DRIVER FOR CX773A
— TOP VIEW —


SC COM OUT 1
2 VDD(+5V)
EXT SC IN 3
MODE 1 IN 4
MODE 2 IN 5
HR OUT 6
VR OUT 7
H COM OUT 8
H COM IN 9
18 TGC OUT
17 LALTR OUT
16 INT SC IN
15 EXT SYNC IN
GND 14
13 INT HD IN
12 CK IN
11 EXT LALT IN
10 EXT/INT OUT

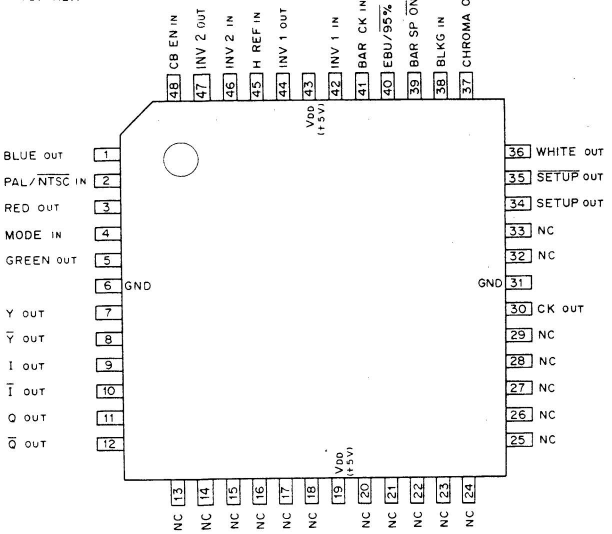

2
VDD
15 EXT SYNC
EXT/INT 10
VR 7
13 INT HD
HR 6
9 HCOM IN
HCOM OUT 8
3 EXT SC
SC COM 1
16 INT SC
11 EXT LALT
LALTR 17
4 MODE 1
TGC 18
5 MODE 2
12 CK
GND
14

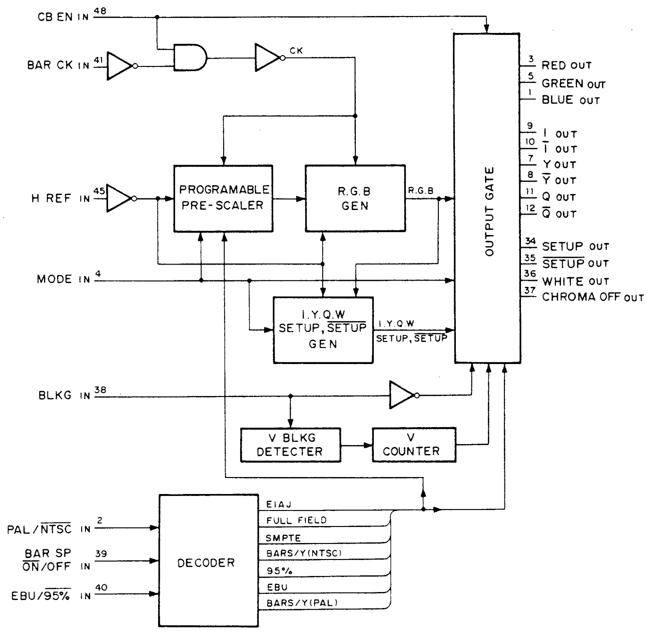
INPUTS		EXT LOCK MODE	
MODE 2	MODE 1		
0	0	M1	PAL: VBS
0	1	M2	PALM: VBS
1	0	M3	PAL : VS/SC/LALT
			SECAM: VS/SC/LALT
1	1	M4	NTSC: VBS
			NTSC: VS/SC
			PALM: VS/SC/LALT

0 ; LOW LEVEL
1 ; HIGH LEVEL


EXT SYNC
15
EXT/INT DETECTOR
10
EXT/INT
FH, FV SEPARATOR
FV
FH
7
VR
6
HR
INT HD
13
(FROM CX773A)
PHASE COMPARATOR
EXT
INT
8
HCOM
HCOM
9
(FROM CX773A)
EXT SC
3
INT SC
16
(FROM CX773A)
PHASE COMPARATOR
1
SC COM
TGC/BF GENERATOR
TGC
BF
18
TGC
TIMING PULSE DET
EXT LALT
11
SQUARE WAVE OR PAL PULSE DETECTOR
L ALTR GENERATOR
17
LALTR
MODE 1
4
MODE 2
5
DECODER
M1
M2
M3
M4
2
VDD(+5V)
CK(4Fsc)
12
(FROM CX773A)
÷2
CLOCK
14
GND

CX7968A (SONY)
C-MOS COLOR BAR GENERATOR
— TOP VIEW —


48 CB EN IN
47 INV 2 OUT
46 INV 2 IN
45 H REF IN
44 INV 1 OUT
43 VDD (+5V)
42 INV 1 IN
41 BAR CK IN
40 EBU/$\overline{95\%}$ IN
39 BAR SP $\overline{ON}$/OFF IN
38 BLKG IN
37 CHROMA OFF OUT
1 BLUE OUT
2 PAL/$\overline{NTSC}$ IN
3 RED OUT
4 MODE IN
5 GREEN OUT
6 GND
7 Y OUT
8 $\overline{Y}$ OUT
9 I OUT
10 $\overline{I}$ OUT
11 Q OUT
12 $\overline{Q}$ OUT
36 WHITE OUT
35 $\overline{SETUP}$ OUT
34 SETUP OUT
33 NC
32 NC
31 GND
30 CK OUT
29 NC
28 NC
27 NC
26 NC
25 NC
13 NC
14 NC
15 NC
16 NC
17 NC
18 NC
19 VDD (+5V)
20 NC
21 NC
22 NC
23 NC
24 NC

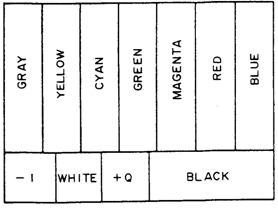

CB EN IN 48
BAR CK IN 41
CK
H REF IN 45
PROGRAMABLE PRE-SCALER
R.G.B GEN
R.G.B
OUTPUT GATE
MODE IN 4
I.Y.Q.W SETUP, $\overline{SETUP}$ GEN
I.Y.Q.W SETUP, $\overline{SETUP}$
BLKG IN 38
V BLKG DETECTER
V COUNTER
PAL/$\overline{NTSC}$ IN 2
BAR SP $\overline{ON}$/OFF IN 39
EBU/$\overline{95\%}$ IN 40
DECODER
EIAJ
FULL FIELD
SMPTE
BARS/Y(NTSC)
95%
EBU
BARS/Y(PAL)
3 RED OUT
5 GREEN OUT
1 BLUE OUT
9 I OUT
10 $\overline{I}$ OUT
7 Y OUT
8 $\overline{Y}$ OUT
11 Q OUT
12 $\overline{Q}$ OUT
34 SETUP OUT
35 $\overline{SETUP}$ OUT
36 WHITE OUT
37 CHROMA OFF OUT

INPUT				FUNCTION
PAL/$\overline{NTSC}$	MODE	EBU/$\overline{95\%}$	BAR SP	
0	0	0	0	EIAJ COLOR BAR
0	0	0	1	FULL FIELD COLOR BAR
0	0	1	0	INHIBIT
0	0	1	1	INHIBIT
0	1	0	0	EIAJ COLOR BAR
0	1	0	1	FULL FIELD COLOR BAR
0	1	1	0	SMPTE COLOR BAR
0	1	1	1	COLOR BAR + Y BAR
1	0	0	0	95% COLOR BAR
1	0	0	1	INHIBIT
1	0	1	0	EBU COLOR BAR
1	0	1	1	INHIBIT
1	1	0	0	95% COLOR BAR
1	1	0	1	COLOR BAR + Y BAR
1	1	1	0	EBU COLOR BAR
1	1	1	1	INHIBIT

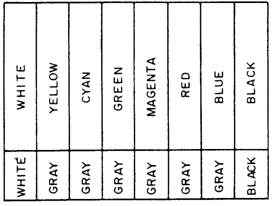
0 ; LOW LEVEL
1 ; HIGH LEVEL

O COLOR BAR PATTERN

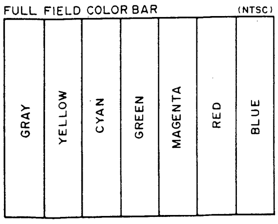
EIAJ COLOR BAR (NTSC)


GRAY
YELLOW
CYAN
GREEN
MAGENTA
RED
BLUE
− I
WHITE
+Q
BLACK

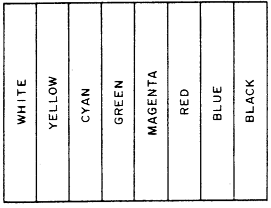
COLOR BAR + Y BAR (PAL) or (NTSC)


WHITE
YELLOW
CYAN
GREEN
MAGENTA
RED
BLUE
BLACK
WHITE
GRAY
GRAY
GRAY
GRAY
GRAY
GRAY
BLACK

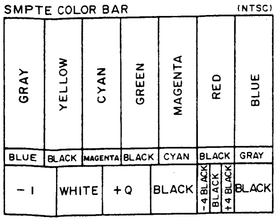
FULL FIELD COLOR BAR (NTSC)


GRAY
YELLOW
CYAN
GREEN
MAGENTA
RED
BLUE

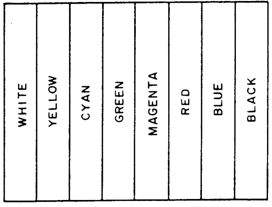
95% COLOR BAR (PAL)


WHITE
YELLOW
CYAN
GREEN
MAGENTA
RED
BLUE
BLACK

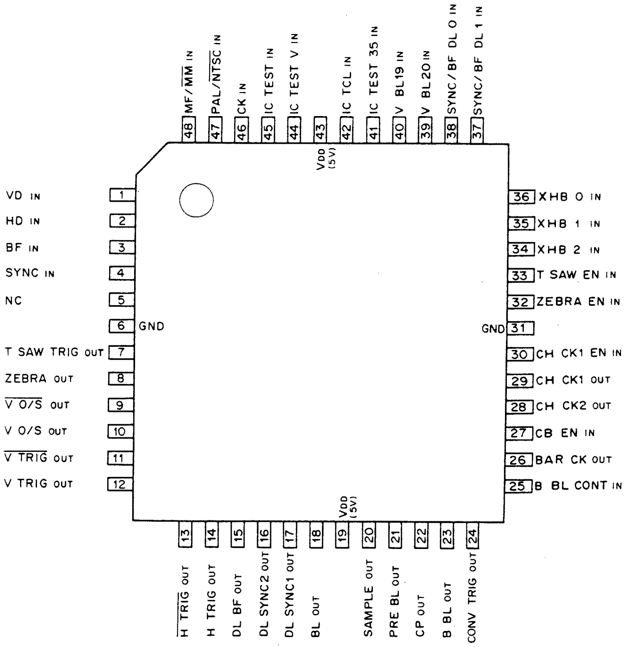
SMPTE COLOR BAR (NTSC)


GRAY
YELLOW
CYAN
GREEN
MAGENTA
RED
BLUE
BLUE
BLACK
MAGENTA
BLACK
CYAN
BLACK
GRAY
− I
WHITE
+Q
BLACK
-4 BLACK
BLACK
+4 BLACK
BLACK

EBU COLOR BAR (PAL)


WHITE
YELLOW
CYAN
GREEN
MAGENTA
RED
BLUE
BLACK

CX7969 (SONY)
C-MOS PULSE GENERATOR
— TOP VIEW —


48 MF/$\overline{MM}$ IN
47 PAL/$\overline{NTSC}$ IN
46 CK IN
45 IC TEST IN
44 IC TEST V IN
43 VDD (5V)
42 IC TCL IN
41 IC TEST 35 IN
40 V BL19 IN
39 V BL20 IN
38 SYNC/BF DL 0 IN
37 SYNC/BF DL 1 IN
1 VD IN
2 HD IN
3 BF IN
4 SYNC IN
5 NC
6 GND
7 T SAW TRIG OUT
8 ZEBRA OUT
9 $\overline{V O/S}$ OUT
10 V O/S OUT
11 $\overline{V TRIG}$ OUT
12 V TRIG OUT
36 XHB 0 IN
35 XHB 1 IN
34 XHB 2 IN
33 T SAW EN IN
32 ZEBRA EN IN
31 GND
30 CH CK1 EN IN
29 CH CK1 OUT
28 CH CK2 OUT
27 CB EN IN
26 BAR CK OUT
25 B BL CONT IN
13 $\overline{H TRIG}$ OUT
14 H TRIG OUT
15 DL BF OUT
16 DL SYNC2 OUT
17 DL SYNC1 OUT
18 BL OUT
19 VDD (5V)
20 SAMPLE OUT
21 PRE BL OUT
22 CP OUT
23 B BL OUT
24 CONV TRIG OUT

1. SYSTEM DESIGNATION

INPUT	SYSTEM
PAL/$\overline{\text{NTSC}}$ IN	
1	PAL, SECAM
0	NTSC, PALM

2. TYPE OF TUBE

INPUT	FUNCTION
MF/$\overline{\text{MM}}$ IN	
1	MAG-STA TUBE
0	MAG-MAG TUBE

3. V BLKG WIDTH (NTSC ONLY)

INPUT		V BLKG WIDTH
V BL 19	V BL 20	
1	X	19H
0	0	20H
0	1	21H

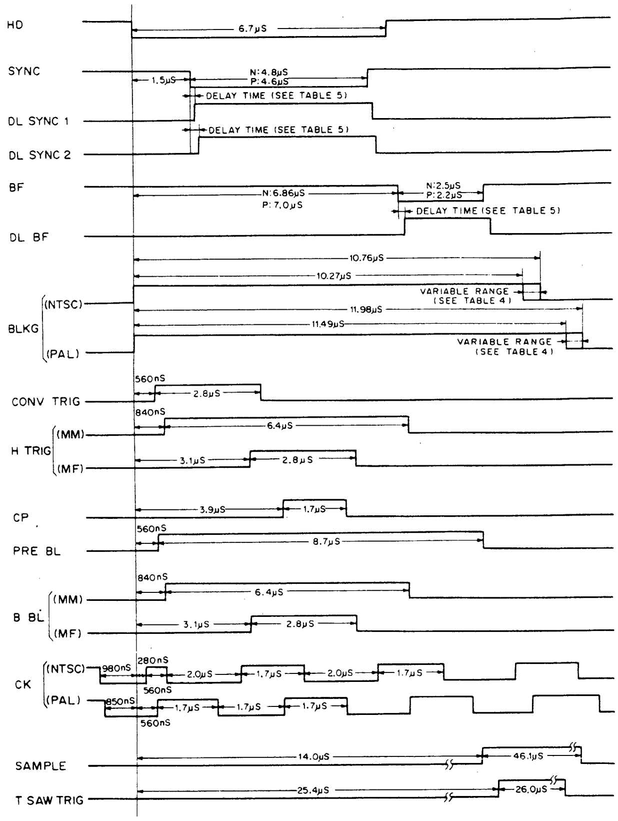
4. H BLKG WIDTH

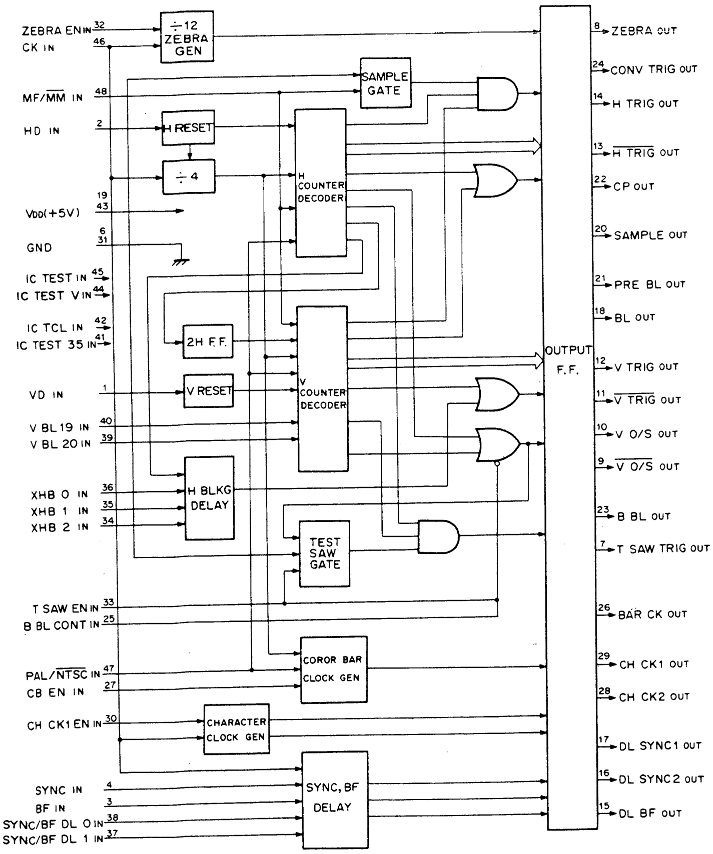
INPUT			BLKG WIDTH (µS)	
XHB2	XHB1	XHB0	NTSC	PAL
1	1	1	10.27	11.49
1	1	0	10.34	11.56
1	0	1	10.41	11.63
1	0	0	10.48	11.70
0	1	1	10.55	11.77
0	1	0	10.62	11.84
0	0	1	10.69	11.91
0	0	0	10.76	11.98

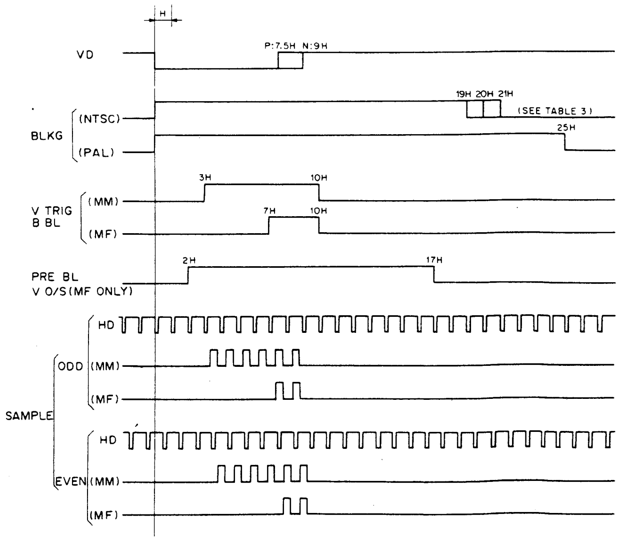
5. DELAY TIME

INPUT		DELAY TIME (nS)		
SYNC/BF DL1	SYNC/BF DL2	DL SYNC 1	DL SYNC 2	DL BF
1	1	140	210	140
1	0	210	280	210
0	1	630	700	630
0	0	700	770	700

1; HIGH LEVEL
0; LOW LEVEL
X; DON'T CARE


HD
6.7µS
SYNC
1.5µS
N:4.8µS
P:4.6µS
DELAY TIME (SEE TABLE 5)
DL SYNC 1
DELAY TIME (SEE TABLE 5)
DL SYNC 2
BF
N:6.86µS
P:7.0µS
N:2.5µS
P:2.2µS
DELAY TIME (SEE TABLE 5)
DL BF
10.76µS
10.27µS
VARIABLE RANGE (SEE TABLE 4)
11.98µS
11.49µS
VARIABLE RANGE (SEE TABLE 4)
BLKG
(NTSC)
(PAL)
560nS
2.8µS
CONV TRIG
840nS
6.4µS
H TRIG
(MM)
(MF)
3.1µS
2.8µS
CP
3.9µS
1.7µS
560nS
8.7µS
PRE BL
840nS
6.4µS
B BL
(MM)
(MF)
3.1µS
2.8µS
CK
(NTSC)
(PAL)
980nS
280nS
2.0µS
1.7µS
2.0µS
1.7µS
560nS
850nS
1.7µS
1.7µS
1.7µS
560nS
SAMPLE
14.0µS
46.1µS
T SAW TRIG
25.4µS
26.0µS

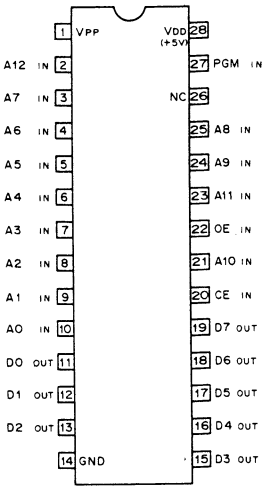

ZEBRA EN IN 32
CK IN 46
÷12 ZEBRA GEN
MF/$\overline{\text{MM}}$ IN 48
HD IN 2
H RESET
÷4
VDD(+5V) 19 43
GND 6 31
IC TEST IN 45
IC TEST V IN 44
IC TCL IN 42
IC TEST 35 IN 41
VD IN 1
V BL19 IN 40
V BL 20 IN 39
XHB 0 IN 36
XHB 1 IN 35
XHB 2 IN 34
T SAW EN IN 33
B BL CONT IN 25
PAL/$\overline{\text{NTSC}}$ IN 47
CB EN IN 27
CH CK1 EN IN 30
SYNC IN 4
BF IN 3
SYNC/BF DL 0 IN 38
SYNC/BF DL 1 IN 37
SAMPLE GATE
H COUNTER DECODER
2H F.F.
V RESET
V COUNTER DECODER
H BLKG DELAY
TEST SAW GATE
COROR BAR CLOCK GEN
CHARACTER CLOCK GEN
SYNC, BF DELAY
OUTPUT F.F.
8 ZEBRA OUT
24 CONV TRIG OUT
14 H TRIG OUT
13 $\overline{\text{H TRIG}}$ OUT
22 CP OUT
20 SAMPLE OUT
21 PRE BL OUT
18 BL OUT
12 V TRIG OUT
11 $\overline{\text{V TRIG}}$ OUT
10 V O/S OUT
9 $\overline{\text{V O/S}}$ OUT
23 B BL OUT
7 T SAW TRIG OUT
26 BAR CK OUT
29 CH CK1 OUT
28 CH CK2 OUT
17 DL SYNC1 OUT
16 DL SYNC2 OUT
15 DL BF OUT

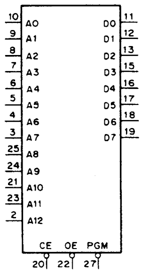

H
VD
P:7.5H N:9H
BLKG
(NTSC)
(PAL)
19H 20H 21H
(SEE TABLE 3)
25H
V TRIG
B BL
(MM)
(MF)
3H
10H
7H
10H
PRE BL
V O/S (MF ONLY)
2H
17H
SAMPLE
ODD
EVEN
HD
(MM)
(MF)

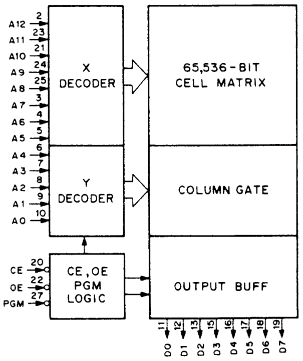
HN27C64G-20 (HITACHI) (ACCESS TIME = 200 nS)

C-MOS 64K (8K-8) ERASABLE PROM WITH 3-STATE OUTPUTS

— TOP VIEW —


1 VPP
A12 IN 2
A7 IN 3
A6 IN 4
A5 IN 5
A4 IN 6
A3 IN 7
A2 IN 8
A1 IN 9
AO IN 10
DO OUT 11
D1 OUT 12
D2 OUT 13
14 GND
VDD (+5V) 28
27 PGM IN
NC 26
25 A8 IN
24 A9 IN
23 A11 IN
22 OE IN
21 A10 IN
20 CE IN
19 D7 OUT
18 D6 OUT
17 D5 OUT
16 D4 OUT
15 D3 OUT


10 AO
9 A1
8 A2
7 A3
6 A4
5 A5
4 A6
3 A7
25 A8
24 A9
21 A10
23 A11
2 A12
DO 11
D1 12
D2 13
D3 15
D4 16
D5 17
D6 18
D7 19
CE OE PGM
20 22 27


A12 2
A11 23
A10 21
A9 24
A8 25
A7 3
A6 4
A5 5
A4 6
A3 7
A2 8
A1 9
AO 10
X DECODER
65,536-BIT CELL MATRIX
Y DECODER
COLUMN GATE
CE 20
OE 22
PGM 27
CE, OE PGM LOGIC
OUTPUT BUFF
11 12 13 15 16 17 18 19
DO D1 D2 D3 D4 D5 D6 D7

AO-A12 ; ADDRESS
CE ; CHIP ENABLE
DO-D7 ; DATA OUTPUT
OE ; OUTPUT ENABLE
PGM ; PROGRAM ENABLE
VPP ; PROGRAM VOLTAGE

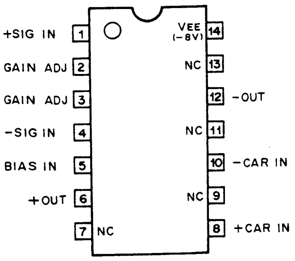
An	CE	OE	PGM	VPP	Dn	FUNCTION
An	O	O	1	+5V	D OUT	READ
An	O	1	1	+5V	HI-Z	OUTPUT DISABLE
An	O	O	O	+5V	HI-Z	OUTPUT DISABLE
X	1	X	X	+5V	HI-Z	STANDBY
An	O	X	⊔	+21V	DIN	PGM
An	O	O	1	+21V	D OUT	PGM VERIFY
X	1	X	X	+21V	HI-Z	PGM INH

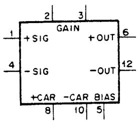
O; LOW LEVEL
1 ; HIGH LEVEL
X; DON'T CARE
HI-Z; HIGH INPEDANCE

MC1496P (MOTOROLA)

BALANCED MODULATOR/DEMODULATOR

— TOP VIEW —

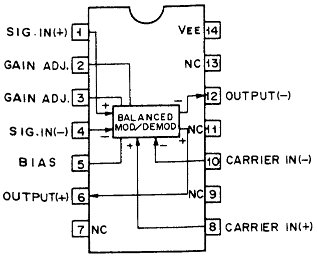

+SIG IN 1
GAIN ADJ 2
GAIN ADJ 3
-SIG IN 4
BIAS IN 5
+OUT 6
7 NC
VEE (-8V) 14
NC 13
12 -OUT
NC 11
10 -CAR IN
NC 9
8 +CAR IN


2 3
GAIN
1 +SIG
+OUT 6
4 -SIG
-OUT 12
+CAR -CAR BIAS
8 10 5

MC1595L (MOTOROLA)

LINEAR MULTIPLIER

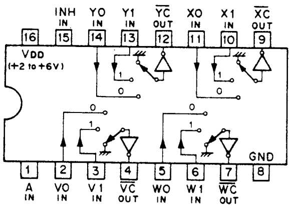
— TOP VIEW —

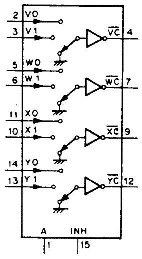

SIG.IN(+) 1
GAIN ADJ. 2
GAIN ADJ. 3
SIG.IN(-) 4
BIAS 5
OUTPUT(+) 6
7 NC
VEE 14
NC 13
12 OUTPUT(-)
NC 11
10 CARRIER IN(-)
NC 9
8 CARRIER IN(+)
BALANCED MOD/DEMOD

MC74HC158N (MOTOROLA)

C-MOS 2-LINE-TO-1-LINE INVERTED DATA SELECTOR/MULTIPLEXER

— TOP VIEW —


INH IN 15
YO IN 14
Y1 IN 13
YC OUT 12
XO IN 11
X1 IN 10
XC OUT 9
16
VDD (+2 to +6V)
1 A IN
2 VO IN
3 V1 IN
4 VC OUT
5 WO IN
6 W1 IN
7 WC OUT
8 GND


2 VO
3 V1
VC 4
5 WO
6 W1
WC 7
11 XO
10 X1
XC 9
14 YO
13 Y1
YC 12
A 1
INH 15

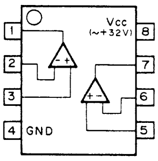
CONT. IN		ON CHANNEL
INH	A	
O	O	O
O	1	1
1	X	GND

O; LOW LEVEL
1 ; HIGH LEVEL
X; DON'T CARE

NJM4556D (JRC)

OPERATIONAL AMPLIFIER

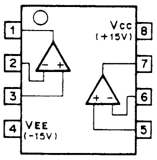
— TOP VIEW —


1
2
3
4 GND
Vcc (~+32V) 8
7
6
5

NJM4560D (JRC)

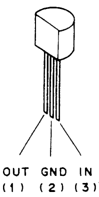
OPERATIONAL AMPLIFIER

— TOP VIEW —

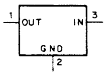

1
2
3
4 VEE (-15V)
Vcc (+15V) 8
7
6
5

NJM78L ? ?A (JRC)

POSITIVE VOLTAGE REGULATOR (100mA)


OUT GND IN
(1) (2) (3)

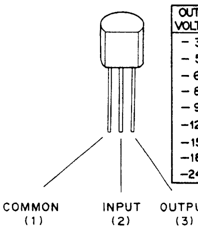
OUTPUT VOLTAGE	??
2V	02
5V	05
6V	06
8V	08
9V	09
12V	12
15V	15


1 OUT
IN 3
GND
2

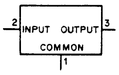
NJM79L ? ?A (JRC)

NEGATIVE VOLTAGE REGULATOR (100mA)

— FRONT VIEW —


COMMON (1)
INPUT (2)
OUTPUT (3)

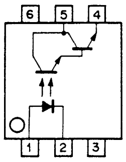
OUTPUT VOLTAGE	??
- 3V	03
- 5V	05
- 6V	06
- 8V	08
- 9V	09
-12V	12
-15V	15
-18V	18
-24V	24


2 INPUT
OUTPUT 3
COMMON
1

PS2002B (NEC)

PHOTO COUPLER

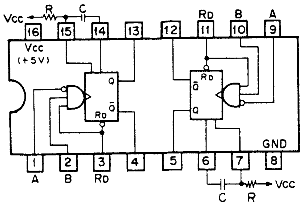
— TOP VIEW —



SN74LS123N (TI)

TTL RETRIGGERABLE MONOSTABLE MULTIVIBRATOR WITH DIRECT RESET

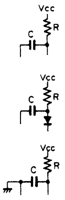
— TOP VIEW —


Vcc
R
C
RD
B
A
16
15
14
13
12
11
10
9
Vcc
(+5V)
Q
RD
Q̄
GND
1
2
3
4
5
6
7
8
A
B
RD
C
R
Vcc

INPUTS			OUTPUTS	
RD	A	B	Q	Q̄
0	X	X	0	1
X	1	X	0	1
X	X	0	0	1
1	0	↑	⊓	⊔
1	↓	1	⊓	⊔
↑	0	1	⊓	⊔

0; LOW LEVEL
1; HIGH LEVEL
X; DON'T CARE

OUTPUT PULSE WIDTH



'123 ; $T_W = 0.28\left(1+\frac{700}{R}\right)CR$

'L123; $T_W = 0.33\left(1+\frac{700}{R}\right)CR$

'123 ; $T_W = 0.25\left(1+\frac{700}{R}\right)CR$

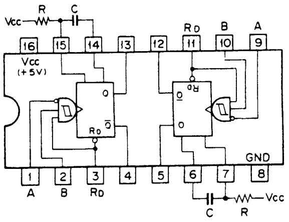
'L123; $T_W = 0.29\left(1+\frac{700}{R}\right)CR$

'LS123; $T_W = 0.45CR$

SN74LS221N (TI)

TTL MONOSTABLE MULTIVIBRATOR WITH SCHMITT TRIGGER INPUT

— TOP VIEW —


R
C
Vcc
RD
B
A
16
15
14
13
12
11
10
9
Vcc
(+5V)
Q
RD
Q̄
GND
1
2
3
4
5
6
7
8
A
B
RD
C
R
Vcc

INPUTS			OUTPUTS	
RD	A	B	Q	Q̄
0	X	X	0	1
X	1	X	0	1
X	X	0	0	1
1	0	↑	⊓	⊔
1	↓	1	⊓	⊔
↑	0	1	⊓	⊔

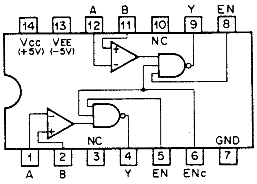
0; LOW LEVEL
1; HIGH LEVEL
X; DON'T CARE

OUTPUT PULSE WIDTH = 0.7CR

SN75207BN (TI)

BIPOLAR LINE RECEIVER (TTL COMPATIBLE)

— TOP VIEW —


A
B
Y
EN
14
13
12
11
10
9
8
Vcc
(+5V)
VEE
(−5V)
NC
NC
GND
1
2
3
4
5
6
7
A
B
Y
EN
ENc

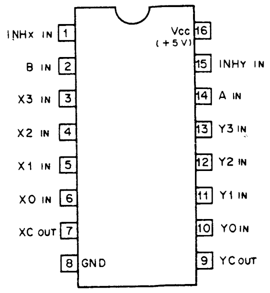
INPUTS			OUT
B − A	EN	ENc	Y
B − A ≧ 10mV	X	0	1
	0	X	1
	1	1	0
|B − A| < 10mV	X	0	1
	0	X	1
	1	1	*
B − A ≦ −10mV	X	X	1

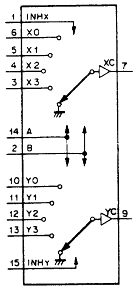
0; LOW LEVEL
1; HIGH LEVEL
X; DON'T CARE
*; INDETERMINATE

SN74LS153N (TI)

TTL 4-LINE-TO-1-LINE DATA SELECTOR/MULTIPLEXER

— TOP VIEW —


INHX IN 1
B IN 2
X3 IN 3
X2 IN 4
X1 IN 5
X0 IN 6
XC OUT 7
8 GND
Vcc (+5V) 16
15 INHY IN
14 A IN
13 Y3 IN
12 Y2 IN
11 Y1 IN
10 Y0 IN
9 YC OUT


1 INHX
6 X0
5 X1
4 X2
3 X3
XC 7
14 A
2 B
10 Y0
11 Y1
12 Y2
13 Y3
YC 9
15 INHY

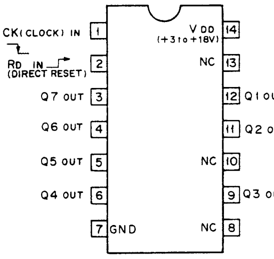
CONTROL IN			ON CHANNEL
INH	B	A	
0	0	0	0
0	0	1	1
0	1	0	2
0	1	1	3
1	X	X	GND

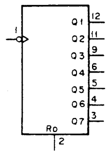
0; LOW LEVEL
1; HIGH LEVEL
X; DON'T CARE

TC4024BP (TOSHIBA)

C-MOS ASYNCHRONOUS 7-BIT BINARY COUNTER

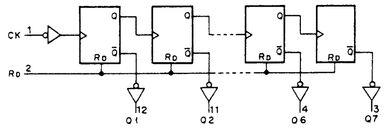
— TOP VIEW —


CK (CLOCK) IN 1
RD IN (DIRECT RESET) 2
Q7 OUT 3
Q6 OUT 4
Q5 OUT 5
Q4 OUT 6
7 GND
VDD (+3 to +18V) 14
NC 13
12 Q1 OUT
11 Q2 OUT
NC 10
9 Q3 OUT
NC 8


1
Q1 12
Q2 11
Q3 9
Q4 6
Q5 5
Q6 4
Q7 3
RD
2

COUNT	INPUTS		OUTPUTS						
	CK	RD	Q7	Q6	Q5	Q4	Q3	Q2	Q1
0	X	1	0	0	0	0	0	0	0
1	↓	0	0	0	0	0	0	0	1
2	↓	0	0	0	0	0	0	1	0
3	↓	0	0	0	0	0	0	1	1
4	↓	0	0	0	0	0	1	0	0
	⋮	⋮	⋮	⋮	⋮	⋮	⋮	⋮	⋮
125	↓	0	1	1	1	1	1	0	1
126	↓	0	1	1	1	1	1	1	0
127	↓	0	1	1	1	1	1	1	1
—	0	0	NO CHANGE						
—	1	0							

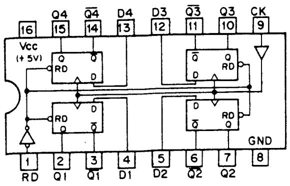
0 ; LOW LEVEL
1 ; HIGH LEVEL
X ; DON'T CARE

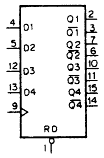

CK 1
RD 2
Q
Q̄
RD
12
Q1
11
Q2
4
Q6
3
Q7

SN74LS175N (TI)

TTL D-TYPE FLIP-FLOP WITH CLEAR

— TOP VIEW —


Q4
Q̄4
D4
D3
Q̄3
Q3
CK
16
15
14
13
12
11
10
9
Vcc
(+5V)
Q
Q̄
D
RD
GND
1
2
3
4
5
6
7
8
RD
Q1
Q̄1
D1
D2
Q̄2
Q2


4 D1
5 D2
12 D3
13 D4
9
Q1 2
Q̄1 3
Q2 7
Q̄2 6
Q3 10
Q̄3 11
Q4 15
Q̄4 14
RD
1

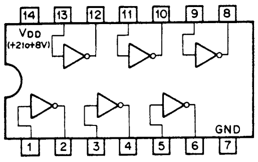
RD	CK	D	Q	Q̄
0	X	X	0	1
1	↑	1	1	0
1	↑	0	0	1
1	0	X	Qo	Q̄o

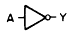
0; LOW LEVEL
1; HIGH LEVEL
X; DON'T CARE

TC40H004P (TOSHIBA)

C-MOS INVERTER

— TOP VIEW —


14
13
12
11
10
9
8
VDD
(+2 to +8V)
GND
1
2
3
4
5
6
7



$Y = \bar{A}$

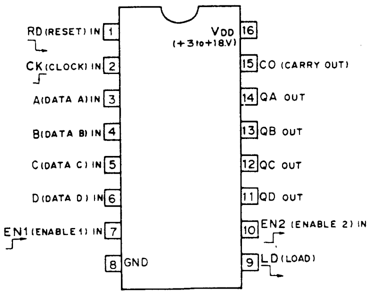
A	Y
0	1
1	0

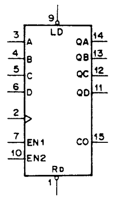
0; LOW LEVEL
1 ; HIGH LEVEL

TC40163BP (TOSHIBA)

C-MOS PRESETTABLE SYNCHRONOUS 4-BIT BINARY COUNTER

— TOP VIEW —


RD (RESET) IN 1
CK (CLOCK) IN 2
A (DATA A) IN 3
B (DATA B) IN 4
C (DATA C) IN 5
D (DATA D) IN 6
EN1 (ENABLE 1) IN 7
8 GND
VDD (+3 to +18V) 16
15 CO (CARRY OUT)
14 QA OUT
13 QB OUT
12 QC OUT
11 QD OUT
10 EN2 (ENABLE 2) IN
9 LD (LOAD)


9
LD
3 A
4 B
5 C
6 D
2
7 EN1
10 EN2
RD
1
QA 14
QB 13
QC 12
QD 11
CO 15

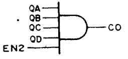
MODE SELECTION

CONTROL INPUTS				MODE
RD	LD	EN1	EN2	
0	X	X	X	RESET (SYNCHRONOUS)
1	0	X	X	PRESET (SYNCHRONOUS)
1	1	0	X	NO COUNT
1	1	X	0	NO COUNT
1	1	1	1	COUNT

COUNT SEQUENCE

COUNT	OUTPUTS			
	QD	QC	QB	QA
0	0	0	0	0
1	0	0	0	1
2	0	0	1	0
3	0	0	1	1
4	0	1	0	0
5	0	1	0	1
6	0	1	1	0
7	0	1	1	1
8	1	0	0	0
9	1	0	0	1
10	1	0	1	0
11	1	0	1	1
12	1	1	0	0
13	1	1	0	1
14	1	1	1	0
15	1	1	1	1

CARRY OUTPUT "CO"

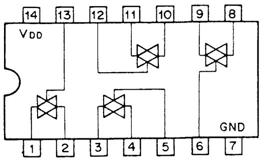

QA
QB
QC
QD
EN2
CO

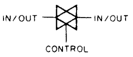
CO IS HIGH WHEN EN2 INPUT IS HIGH AND COUNT IS "15".

TC4016BP (TOSHIBA)

C-MOS BILATERAL SWITCH

— TOP VIEW —


14 13 12 11 10 9 8
VDD
GND
1 2 3 4 5 6 7

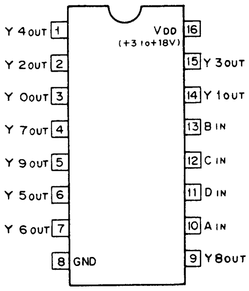

IN/OUT
IN/OUT
CONTROL

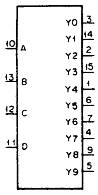
CONTROL	SWITCH
0	OFF
1	ON

TC4028BP (TOSHIBA)

C-MOS BCD TO DECIMAL DECODER

— TOP VIEW —


Y 4OUT 1
Y 2OUT 2
Y 0OUT 3
Y 7OUT 4
Y 9OUT 5
Y 5OUT 6
Y 6OUT 7
8 GND
VDD (+3 to +18V) 16
15 Y 3OUT
14 Y 1OUT
13 B IN
12 C IN
11 D IN
10 A IN
9 Y 8OUT


10 A
13 B
12 C
11 D
Y0 3
Y1 14
Y2 2
Y3 15
Y4 1
Y5 6
Y6 7
Y7 4
Y8 9
Y9 5

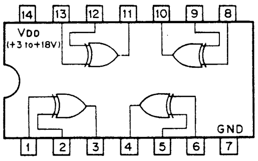
STATE	INPUTS				OUTPUTS									
	D	C	B	A	Y0	Y1	Y2	Y3	Y4	Y5	Y6	Y7	Y8	Y9
0	0	0	0	0	1	0	0	0	0	0	0	0	0	0
1	0	0	0	1	0	1	0	0	0	0	0	0	0	0
2	0	0	1	0	0	0	1	0	0	0	0	0	0	0
3	0	0	1	1	0	0	0	1	0	0	0	0	0	0
4	0	1	0	0	0	0	0	0	1	0	0	0	0	0
5	0	1	0	1	0	0	0	0	0	1	0	0	0	0
6	0	1	1	0	0	0	0	0	0	0	1	0	0	0
7	0	1	1	1	0	0	0	0	0	0	0	1	0	0
8	1	X	X	0	0	0	0	0	0	0	0	0	1	0
9	1	X	X	1	0	0	0	0	0	0	0	0	0	1

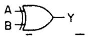
0; LOW LEVEL
1; HIGH LEVEL
X; DON'T CARE

TC4030BP (TOSHIBA)

C-MOS EXCLUSIVE OR GATE

— TOP VIEW —


14 13 12 11 10 9 8
VDD (+3 to +18V)
GND
1 2 3 4 5 6 7



$Y = \bar{A} \cdot B + A \cdot \bar{B}$

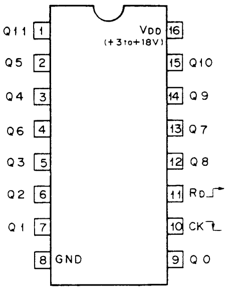
A	B	Y
0	0	0
0	1	1
1	0	1
1	1	0

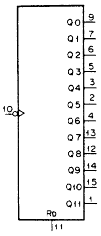
0; LOW LEVEL
1; HIGH LEVEL

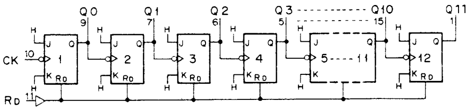
TC4040BP (TOSHIBA)

C-MOS 12-STAGE RIPPLE CARRY BINARY COUNTER/DRIVER

— TOP VIEW —


Q11 1
Q5 2
Q4 3
Q6 4
Q3 5
Q2 6
Q1 7
8 GND
VDD (+3 to +18V) 16
15 Q10
14 Q9
13 Q7
12 Q8
11 RD
10 CK
9 Q0


10
Q0 9
Q1 7
Q2 6
Q3 5
Q4 3
Q5 2
Q6 4
Q7 13
Q8 12
Q9 14
Q10 15
Q11 1
RD
11


Q0 9
Q1 7
Q2 6
Q3 5
Q10 15
Q11 1
CK 10
RD 11
J Q K RD
1
2
3
4
5 ---- 11
12
H

COUNT	Q11	Q10	Q9	Q8	Q7	Q6	Q5	Q4	Q3	Q2	Q1	Q0
0	0	0	0	0	0	0	0	0	0	0	0	0
1	0	0	0	0	0	0	0	0	0	0	0	1
2	0	0	0	0	0	0	0	0	0	0	1	0
3	0	0	0	0	0	0	0	0	0	0	1	1
⋮	⋮	⋮	⋮	⋮	⋮	⋮	⋮	⋮	⋮	⋮	⋮	⋮
4095	1	1	1	1	1	1	1	1	1	1	1	1

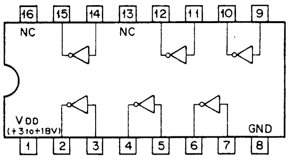
RD	Q11 ------- Q0
1	ALL LOW
0	COUNT

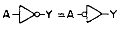
0; LOW LEVEL
1; HIGH LEVEL

TC4049BP (TOSHIBA)

C-MOS INVERTING TYPE BUFFER/CONVERTER

— TOP VIEW —


16 15 14 13 12 11 10 9
NC
NC
VDD (+3 to +18V)
GND
1 2 3 4 5 6 7 8



$Y = \bar{A}$

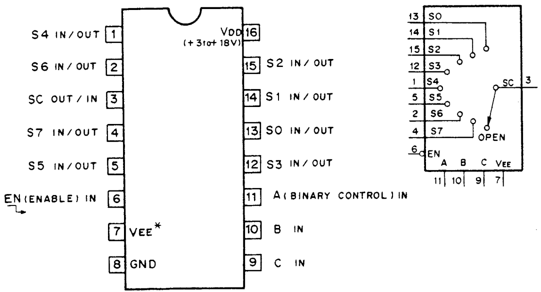
A	Y
0	1
1	0

0; LOW LEVEL
1; HIGH LEVEL

TC4051BP (TOSHIBA)

C-MOS 8-CHANNEL MULTIPLEXER/DEMULTIPLEXER

— TOP VIEW —


S4 IN/OUT 1
S6 IN/OUT 2
SC OUT/IN 3
S7 IN/OUT 4
S5 IN/OUT 5
EN (ENABLE) IN 6
7 VEE*
8 GND
VDD (+3 to +18V) 16
15 S2 IN/OUT
14 S1 IN/OUT
13 S0 IN/OUT
12 S3 IN/OUT
11 A (BINARY CONTROL) IN
10 B IN
9 C IN
S0
S1
S2
S3
S4
S5
S6
S7
SC
OPEN
EN
A B C VEE
11 10 9 7

VEE* ; VDD – VEE : +3 to +18V

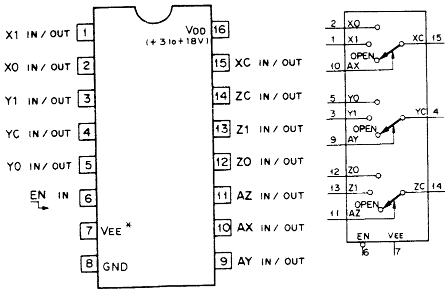
EN	C	B	A	"ON" CHANNEL
0	0	0	0	0
0	0	0	1	1
0	0	1	0	2
0	0	1	1	3
0	1	0	0	4
0	1	0	1	5
0	1	1	0	6
0	1	1	1	7
1	X	X	X	OPEN

0 ; LOW LEVEL
1 ; HIGH LEVEL
X ; DON'T CARE

TC4053BP (TOSHIBA)

C-MOS 2-CHANNEL MULTIPLEXER/DEMULTIPLEXER

— TOP VIEW —


X1 IN/OUT 1
X0 IN/OUT 2
Y1 IN/OUT 3
YC IN/OUT 4
Y0 IN/OUT 5
EN IN 6
7 VEE*
8 GND
VDD (+3 to +18V) 16
15 XC IN/OUT
14 ZC IN/OUT
13 Z1 IN/OUT
12 Z0 IN/OUT
11 AZ IN/OUT
10 AX IN/OUT
9 AY IN/OUT
X0
X1
XC
OPEN
AX
Y0
Y1
YC
AY
Z0
Z1
ZC
AZ
EN
VEE

VEE* ; VDD – VEE : +3 to +18V

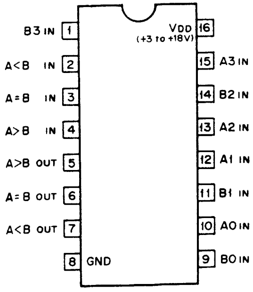
CONT. INPUTS		ON CHANNEL
EN	A (X,Y,Z,)	
0	0	0
0	1	1
1	X	OPEN

0 ; LOW LEVEL
1 ; HIGH LEVEL
X ; DON'T CARE.

TC4063BP (TOSHIBA)

C-MOS 4-BIT MAGNITUDE COMPARATOR

— TOP VIEW —


B3 IN 1
A<B IN 2
A=B IN 3
A>B IN 4
A>B OUT 5
A=B OUT 6
A<B OUT 7
8 GND
VDD (+3 to +18V) 16
15 A3 IN
14 B2 IN
13 A2 IN
12 A1 IN
11 B1 IN
10 A0 IN
9 B0 IN

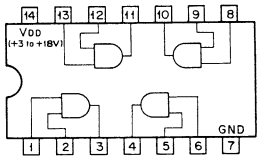
INPUTS							OUTPUTS		
COMPARATING				CASCADING					
A3,B3	A2,B2	A1,B1	A0,B0	A<B	A=B	A>B	A<B	A=B	A>B
A3>B3	X	X	X	X	X	X	0	0	1
A3=B3	A2>B2	X	X	X	X	X	0	0	1
A3=B3	A2=B2	A1>B1	X	X	X	X	0	0	1
A3=B3	A2=B2	A1=B1	A0>B0	X	X	X	0	0	1
A3=B3	A2=B2	A1=B1	A0=B0	0	0	0	0	0	1
A3=B3	A2=B2	A1=B1	A0=B0	0	1	1	0	1	0
A3=B3	A2=B2	A1=B1	A0=B0	1	0	0	1	0	0
A3=B3	A2=B2	A1=B1	A0<B0	X	X	X	1	0	0
A3=B3	A2=B2	A1<B1	X	X	X	X	1	0	0
A3=B3	A2<B2	X	X	X	X	X	1	0	0
A3<B3	X	X	X	X	X	X	1	0	0

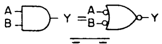
0 ; LOW LEVEL
1 ; HIGH LEVEL
X ; DON'T CARE

TC4081BP (TOSHIBA)

C-MOS 2-INPUT AND GATE

— TOP VIEW —


14 13 12 11 10 9 8
VDD (+3 to +18V)
GND
1 2 3 4 5 6 7



$Y = A \cdot B = \overline{\overline{A} + \overline{B}}$

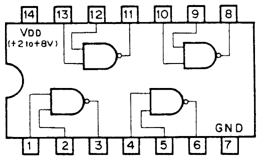
A	B	Y
0	0	0
0	1	0
1	0	0
1	1	1

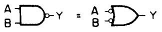
0 ; LOW LEVEL
1 ; HIGH LEVEL

TC40H000P (TOSHIBA)

C-MOS 2-INPUT NAND GATE

— TOP VIEW —


14 13 12 11 10 9 8
VDD (+2 to +8V)
GND
1 2 3 4 5 6 7



$Y = \overline{A \cdot B} = \overline{A} + \overline{B}$

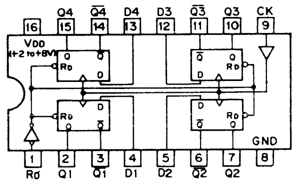
A	B	Y
0	0	1
0	1	1
1	0	1
1	1	0

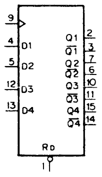
0 ; LOW LEVEL
1 ; HIGH LEVEL

TC40H175P (TOSHIBA)

C-MOS D-TYPE FLIP-FLOP WITH CLEAR

— TOP VIEW —


Q4 $\overline{Q4}$ D4 D3 $\overline{Q3}$ Q3 CK
16 15 14 13 12 11 10 9
VDD (+2 to +8V)
Q $\overline{Q}$ RD D
GND
1 2 3 4 5 6 7 8
RD Q1 $\overline{Q1}$ D1 D2 $\overline{Q2}$ Q2


9
4 D1
5 D2
12 D3
13 D4
Q1 2
$\overline{Q1}$ 3
Q2 7
$\overline{Q2}$ 6
Q3 10
$\overline{Q3}$ 11
Q4 15
$\overline{Q4}$ 14
RD
1

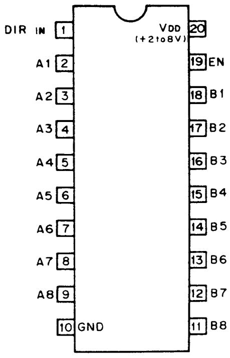
RD	CK	D	Q	$\overline{Q}$
0	X	X	0	1
1	_┌	1	1	0
1	_┌	0	0	1
1	0	X	Qo	$\overline{Qo}$

0 ; LOW LEVEL
1 ; HIGH LEVEL
X ; DON'T CARE

TC40H245P (TOSHIBA)

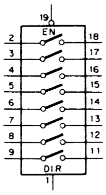
C-MOS BILATERAL BUS TRANSCEIVERS WITH 3-STATE OUTPUT

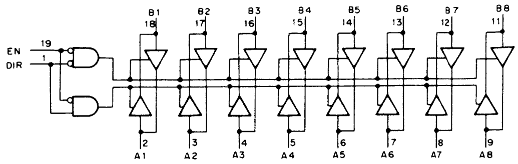
— TOP VIEW —


DIR IN 1
A1 2
A2 3
A3 4
A4 5
A5 6
A6 7
A7 8
A8 9
10 GND
VDD (+2 to 8V) 20
19 EN IN
18 B1
17 B2
16 B3
15 B4
14 B5
13 B6
12 B7
11 B8

EN	DIR	OPERATION
0	0	B to A
0	1	A to B
1	X	HI – Z

0 ; LOW LEVEL
1 ; HIGH LEVEL
X ; DON'T CARE.

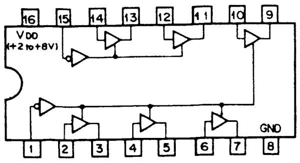

19
EN
2 18
3 17
4 16
5 15
6 14
7 13
8 12
9 11
DIR
1

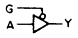

B1 B2 B3 B4 B5 B6 B7 B8
18 17 16 15 14 13 12 11
EN 19
DIR 1
2 3 4 5 6 7 8 9
A1 A2 A3 A4 A5 A6 A7 A8

TC40H367P (TOSHIBA)

C-MOS BUS DRIVER WITH 3-STATE OUTPUTS

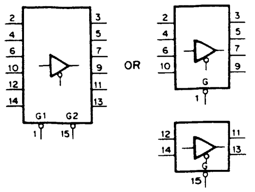
— TOP VIEW —


16
15
14
13
12
11
10
9
VDD
(+2 to+8V)
GND
1
2
3
4
5
6
7
8



G	A	Y
0	0	0
0	1	1
1	X	HI-Z

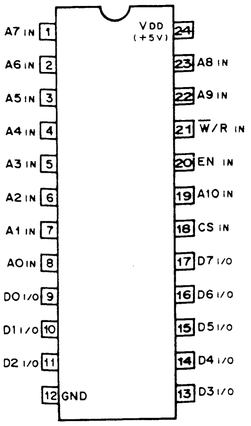
0; LOW LEVEL
1; HIGH LEVEL
X; DON'T CARE
HI-Z; HIGH IMPEDANCE

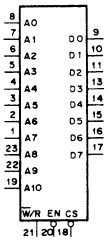

2
4
6
10
12
14
3
5
7
9
11
13
G1
G2
1
15
OR
2
4
6
10
3
5
7
9
G
1
12
14
11
13
G
15

TC5517APL (TOSHIBA) (ACCESS TIME = 250 nS)

C-MOS 16384(2048x8)-BIT HIGH SPEED STATIC RAM

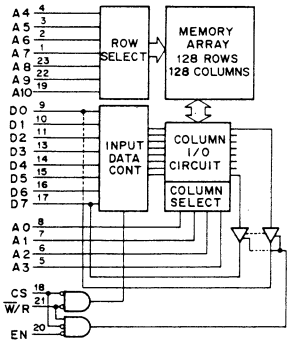
— TOP VIEW —


A7 IN 1
A6 IN 2
A5 IN 3
A4 IN 4
A3 IN 5
A2 IN 6
A1 IN 7
AO IN 8
DO I/O 9
D1 I/O 10
D2 I/O 11
12 GND
VDD (+5V) 24
23 A8 IN
22 A9 IN
21 W/R IN
20 EN IN
19 A10 IN
18 CS IN
17 D7 I/O
16 D6 I/O
15 D5 I/O
14 D4 I/O
13 D3 I/O


8 A0
7 A1
6 A2
5 A3
4 A4
3 A5
2 A6
1 A7
23 A8
22 A9
19 A10
DO 9
D1 10
D2 11
D3 13
D4 14
D5 15
D6 16
D7 17
W/R EN CS
21 20 18

INPUTS			FUNCTION
CS	$\overline{W}$/R	EN	
0	0	X	WRITE
0	1	0	READ
0	1	1	DISABLE (OUTPUT=HI-Z)
1	X	X	DISABLE (OUTPUT=HI-Z)

0; LOW LEVEL
1; HIGH LEVEL
X; DON'T CARE
HI-Z; HIGH IMPEDANCE

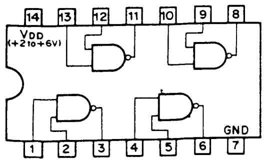

A4 4
A5 3
A6 2
A7 1
A8 23
A9 22
A10 19
ROW SELECT
MEMORY ARRAY 128 ROWS 128 COLUMNS
DO 9
D1 10
D2 11
D3 13
D4 14
D5 15
D6 16
D7 17
INPUT DATA CONT
COLUMN I/O CIRCUIT
COLUMN SELECT
A0 8
A1 7
A2 6
A3 5
CS 18
W/R 21
EN 20

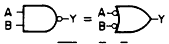
AO - A10 ; ADDRESS INPUTS
$\overline{W}$/R ; WRITE/READ ENABLE
EN ; OUTPUT ENABLE
CS ; CHIP SELECT
DO - D7 ; DATA INPUTS/OUTPUTS

TC74HC00P (TOSHIBA)

C-MOS 2-INPUT NAND GATE

— TOP VIEW —


14
13
12
11
10
9
8
VDD
(+2 to+6V)
GND
1
2
3
4
5
6
7



$Y = \overline{A \cdot B} = \bar{A} + \bar{B}$

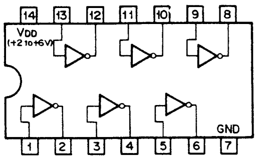
A	B	Y
0	0	1
0	1	1
1	0	1
1	1	0

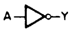
0; LOW LEVEL
1; HIGH LEVEL

TC74HC04P (TOSHIBA)

C-MOS INVERTER

— TOP VIEW —


14
13
12
11
10
9
8
VDD
(+2 to+6V)
GND
1
2
3
4
5
6
7



$Y = \bar{A}$

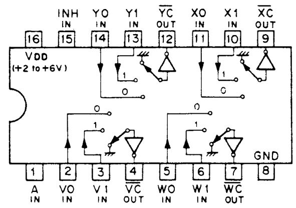
A	Y
0	1
1	0

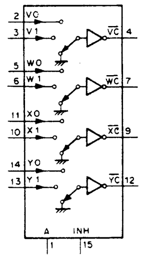
0: LOW LEVEL
1: HIGH LEVEL

TC74HC158P (TOSHIBA)

C-MOS 2-LINE-TO-1-LINE INVERTED DATA SELECTOR/MULTIPLEXER

— TOP VIEW —


INH IN
YO IN
Y1 IN
$\overline{YC}$ OUT
XO IN
X1 IN
$\overline{XC}$ OUT
16
15
14
13
12
11
10
9
VDD
(+2 to+6V)
GND
1
2
3
4
5
6
7
8
A IN
VO IN
V1 IN
$\overline{VC}$ OUT
WO IN
W1 IN
$\overline{WC}$ OUT

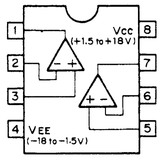

2 VO
3 V1
$\overline{VC}$ 4
5 WO
6 W1
$\overline{WC}$ 7
11 XO
10 X1
$\overline{XC}$ 9
14 YO
13 Y1
$\overline{YC}$ 12
A
INH
1
15

0; LOW LEVEL
1; HIGH LEVEL
X; DON'T CARE

CONT. IN		ON CHANNEL
INH	A	
0	0	0
0	1	1
1	X	GND

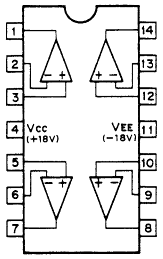
TL062CP (TI)

OPERATIONAL AMPLIFIER
(JFET INPUT)
— TOP VIEW —


1
2
3
4
Vcc
(+1.5 to +18V)
VEE
(−18 to −1.5V)
8
7
6
5

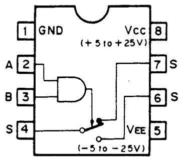
TL064CN (TI)

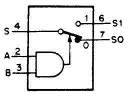
OPERATIONAL AMPLIFIER
(J FET-INPUT)
— TOP VIEW —


1
2
3
4
5
6
7
Vcc
(+18V)
VEE
(−18V)
14
13
12
11
10
9
8

TL601CP (TI)

P-MOS ANALOG SWITCH
— TOP VIEW —


1 GND
A 2
B 3
S 4
Vcc 8
(+5 to +25V)
7 SO
6 S1
VEE 5
(−5 to −25V)


S 4
A 2
B 3
1
0
6 S1
7 SO

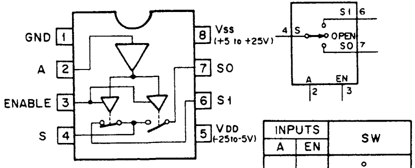
CONT IN		ON CHANNEL
A	B	
0	0	SO
0	1	SO
1	0	SO
1	1	S1

0; LOW LEVEL
1; HIGH LEVEL

TLP651 (TOSHIBA)

PHOTO COUPLER

— TOP VIEW —


GND 1
A 2
ENABLE 3
S 4
8 Vss (+5 to +25V)
7 SO
6 S1
5 VDD (-25to-5V)
S1 6
4 S
OPEN
SO 7
A 2
EN 3

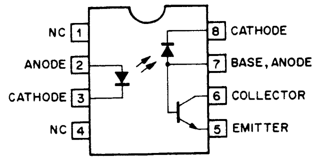
INPUTS		SW
A	EN	
X	0	OPEN
0	1	6 7
1	1	6 7

0;LOW LEVEL
1;HIGH LEVEL
X;DON'T CARE

uA79M??AHC (FSC)

NEGATIVE VOLTAGE REGULATOR (0.5A)

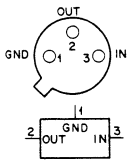
— BOTTOM VIEW —


NC 1
ANODE 2
CATHODE 3
NC 4
8 CATHODE
7 BASE, ANODE
6 COLLECTOR
5 EMITTER

uA79M ? ?AHC (FSC)

NEGATIVE VOLTAGE REGULATOR (0.5A)

— BOTTOM VIEW —

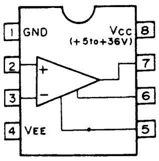

OUT
GND
IN
1
2
3
GND
OUT
IN

−5V	µA79M05AHC
−6V	µA79M06AHC
−8V	µA79M08AHC
−12V	µA79M12AHC
−15V	µA79M15AHC
−20V	µA79M20AHC
−24V	µA79M24AHC

uPC311C (NEC)

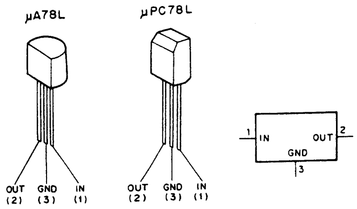
VOLTAGE COMPARATOR

— TOP VIEW —


1 GND
2
3
4 VEE
8 Vcc (+5to+36V)
7
6
5
+
−

uPC78L ? ?A (NEC)

POSITIVE VOLTAGE REGULATOR (100mA)

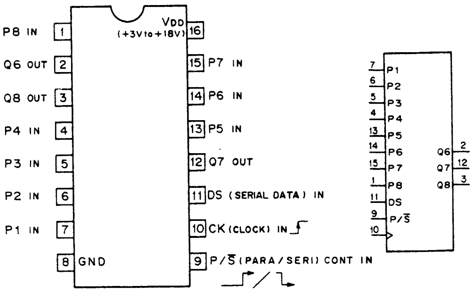

µA78L
µPC78L
OUT (2)
GND (3)
IN (1)
OUT (2)
GND (3)
IN (1)
1 IN
OUT 2
GND
3

2.6V	µA78L26AWV	µA78L02ACL	
5V	µA78L05AWV	µA78L05ACL	µPC78L05(A)
6.2V	µA78L62AWV	µA78L06ACL	
8V		µA78L08ACL	µPC78L08
8.2V	µA78L82AWV		
9V	µA78L09AWV	µA78L09ACL	
10V		µA78L10ACL	
12V	µA78L12 AWV	µA78L12 ACL	µPC78L12
15V	µA78L15 AWV	µA78L15 ACL	µPC78L15
18V	µA78L18 AWV		
24V	µA78L24AWV		

uPD4014BC (NEC)

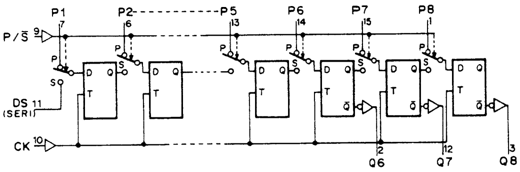
C-MOS SYNCHRONOUS SERIAL/PARALLEL 8-BIT STATIC SHIFT REGISTER

— TOP VIEW —


P8 IN 1
Q6 OUT 2
Q8 OUT 3
P4 IN 4
P3 IN 5
P2 IN 6
P1 IN 7
8 GND
VDD (+3Vto+18V) 16
15 P7 IN
14 P6 IN
13 P5 IN
12 Q7 OUT
11 DS (SERIAL DATA) IN
10 CK (CLOCK) IN
9 P/S̄ (PARA/SERI) CONT IN
7 P1
6 P2
5 P3
4 P4
13 P5
14 P6
15 P7
1 P8
11 DS
9 P/S̄
10
Q6 2
Q7 12
Q8 3

tn				tn+1							
INPUTS				INTERNAL OUTPUTS					OUTPUTS		
P/S̄ CONT	CK	P	DS	Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8
1	↑	P1~P8	X	P1	P2	P3	P4	P5	P6	P7	P8
0	↑	X	1	1	Q1n	Q2n	Q3n	Q4n	Q5n	Q6n	Q7n
0	↑	X	0	0	Q1n	Q2n	Q3n	Q4n	Q5n	Q6n	Q7n
X	0	X	X	Q1n	Q2n	Q3n	Q4n	Q5n	Q6n	Q7n	Q8n

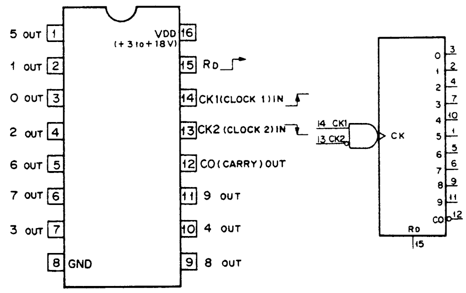
0; LOW LEVEL X; DON'T CARE. tn; BEFORE CLOCK
1; HIGH LEVEL tn+1; AFTER CLOCK


P1
P2
P5
P6
P7
P8
7
6
13
14
15
1
P/S̄ 9
P
S
DS 11 (SERI)
CK 10
D
Q
T
Q̄
2 Q6
12 Q7
3 Q8

uPD4017BC (NEC)

C-MOS DECADE COUNTER/DIVIDER

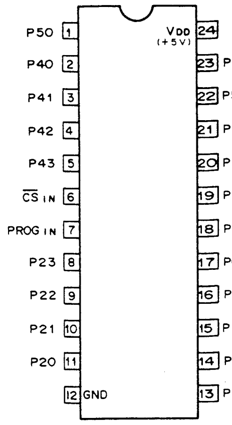
— TOP VIEW —

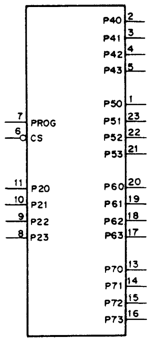

5 OUT 1
1 OUT 2
0 OUT 3
2 OUT 4
6 OUT 5
7 OUT 6
3 OUT 7
8 GND
VDD (+3to+18V) 16
15 RD
14 CK1 (CLOCK 1) IN
13 CK2 (CLOCK 2) IN
12 CO (CARRY) OUT
11 9 OUT
10 4 OUT
9 8 OUT
14 CK1
13 CK2
CK
0 3
1 2
2 4
3 7
4 10
5 1
6 5
7 6
8 9
9 11
CO 12
RD 15

COUNT	INPUTS		OUTPUTS										
	RD	CK=CK1·C̄K̄2̄	9	8	7	6	5	4	3	2	1	0	CO
0	1	X	0	0	0	0	0	0	0	0	0	1	1
0	0	↑	0	0	0	0	0	0	0	0	0	1	1
1	0	↑	0	0	0	0	0	0	0	0	1	0	1
2	0	↑	0	0	0	0	0	0	0	1	0	0	1
3	0	↑	0	0	0	0	0	0	1	0	0	0	1
4	0	↑	0	0	0	0	0	1	0	0	0	0	1
5	0	↑	0	0	0	0	1	0	0	0	0	0	0
6	0	↑	0	0	0	1	0	0	0	0	0	0	0
7	0	↑	0	0	1	0	0	0	0	0	0	0	0
8	0	↑	0	1	0	0	0	0	0	0	0	0	0
9	0	↑	1	0	0	0	0	0	0	0	0	0	0
NO COUNT	0	1	NO CHANGE										
	0	0											

0 ; LOW LEVEL
1 ; HIGH LEVEL
X ; DON'T CARE

uPD82C43C (NEC)
C-MOS I/O PORT EXPANDER
— TOP VIEW —


P50 1
P40 2
P41 3
P42 4
P43 5
CS IN 6
PROG IN 7
P23 8
P22 9
P21 10
P20 11
12 GND
VDD (+5V) 24
23 P51
22 P52
21 P53
20 P60
19 P61
18 P62
17 P63
16 P73
15 P72
14 P71
13 P70

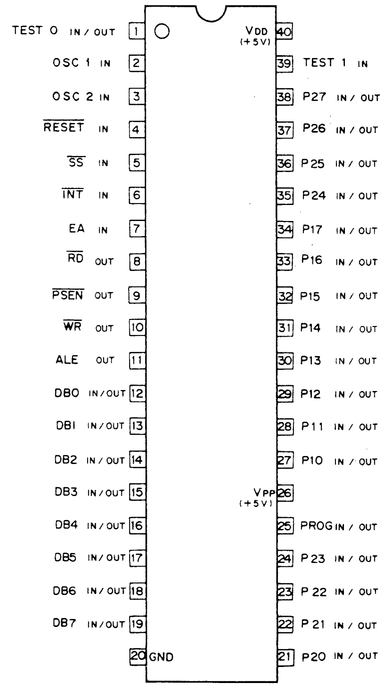

P40 2
P41 3
P42 4
P43 5
P50 1
P51 23
P52 22
P53 21
7 PROG
6 CS
11 P20
10 P21
9 P22
8 P23
P60 20
P61 19
P62 18
P63 17
P70 13
P71 14
P72 15
P73 16

CONTROL AND PORT ADDRESSING

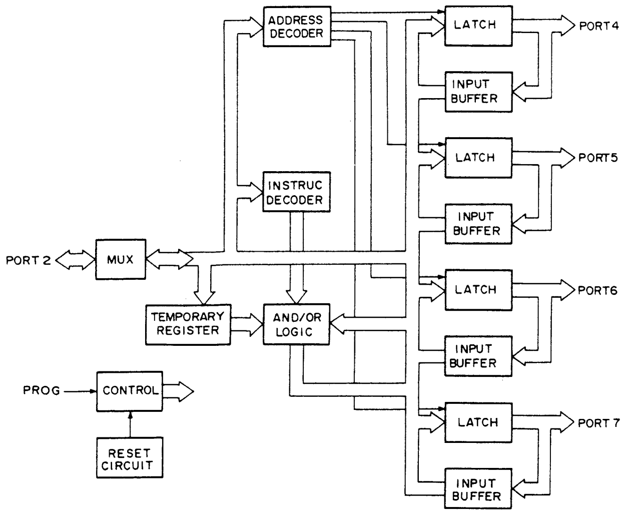
P23	P22	P21	P20	PORT	CONTROL
0	0	0	0	4	READ
0	0	0	1	5	
0	0	1	0	6	
0	0	1	1	7	
0	1	0	0	4	WRITE
0	1	0	1	5	
0	1	1	0	6	
0	1	1	1	7	
1	0	0	0	4	OR
1	0	0	1	5	
1	0	1	0	6	
1	0	1	1	7	
1	1	0	0	4	AND
1	1	0	1	5	
1	1	1	0	6	
1	1	1	1	7	

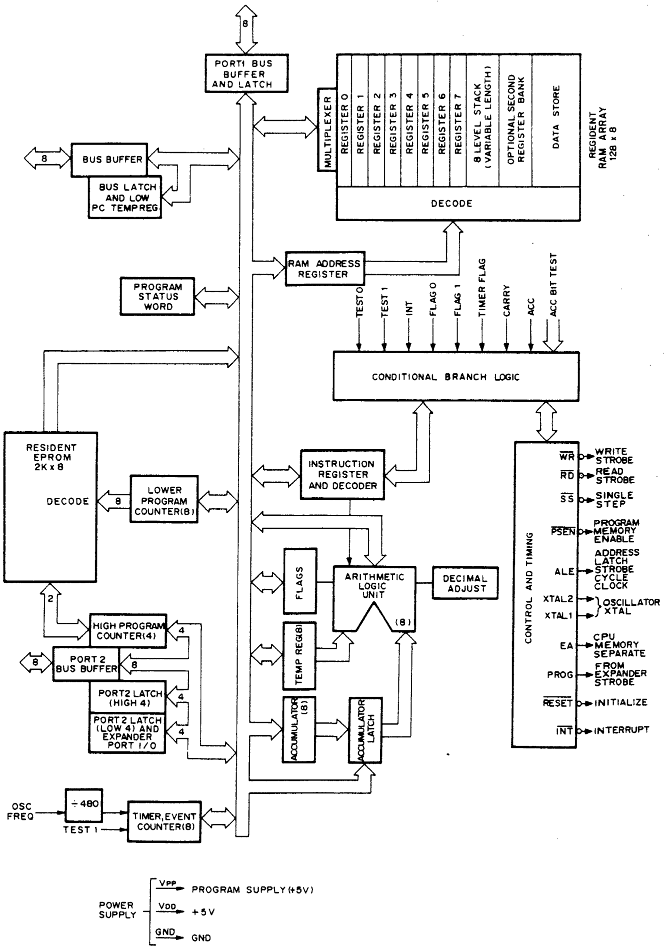
PROG; PROGRAM PULSE INPUT
$\overline{CS}$; CHIP SELECT INPUT
P20~P23; I/O PORT 2 (FOR CPU)
P40~P43; I/O PORT 4
P50~P53; I/O PORT 5
P60~P63; I/O PORT 6
P70~P73; I/O PORT 7

uPD8749HD (NEC)
N-MOS 8-BIT MICROPROCESSOR
— TOP VIEW —


TEST 0 IN / OUT 1
OSC 1 IN 2
OSC 2 IN 3
RESET IN 4
SS IN 5
INT IN 6
EA IN 7
RD OUT 8
PSEN OUT 9
WR OUT 10
ALE OUT 11
DB0 IN/OUT 12
DB1 IN/OUT 13
DB2 IN/OUT 14
DB3 IN/OUT 15
DB4 IN/OUT 16
DB5 IN/OUT 17
DB6 IN/OUT 18
DB7 IN/OUT 19
20 GND
VDD (+5V) 40
39 TEST 1 IN
38 P27 IN / OUT
37 P26 IN / OUT
36 P25 IN / OUT
35 P24 IN / OUT
34 P17 IN / OUT
33 P16 IN / OUT
32 P15 IN / OUT
31 P14 IN / OUT
30 P13 IN / OUT
29 P12 IN / OUT
28 P11 IN / OUT
27 P10 IN / OUT
VPP (+5V) 26
25 PROG IN / OUT
24 P23 IN / OUT
23 P22 IN / OUT
22 P21 IN / OUT
21 P20 IN / OUT

ALE; ADDRESS LATCH ENABLE
$\overline{PSEN}$; PROGRAM STORE ENABLE
$\overline{SS}$; SINGLE STEP
EA; EXTERNAL ACCESS
PROG; PROGRAM PULSE
$\overline{RD}$; READ
$\overline{WR}$; WRITE


ADDRESS DECODER
LATCH
PORT4
INPUT BUFFER
LATCH
PORT5
INSTRUC DECODER
INPUT BUFFER
PORT 2
MUX
LATCH
PORT6
TEMPORARY REGISTER
AND/OR LOGIC
INPUT BUFFER
PROG
CONTROL
LATCH
PORT 7
RESET CIRCUIT
INPUT BUFFER


8
PORT1 BUS BUFFER AND LATCH
MULTIPLEXER
REGISTER 0
REGISTER 1
REGISTER 2
REGISTER 3
REGISTER 4
REGISTER 5
REGISTER 6
REGISTER 7
8 LEVEL STACK (VARIABLE LENGTH)
OPTIONAL SECOND REGISTER BANK
DATA STORE
REGIDENT RAM ARRAY 128 x 8
DECODE
8
BUS BUFFER
BUS LATCH AND LOW PC TEMPREG
RAM ADDRESS REGISTER
PROGRAM STATUS WORD
TEST 0
TEST 1
INT
FLAG 0
FLAG 1
TIMER FLAG
CARRY
ACC
ACC BIT TEST
CONDITIONAL BRANCH LOGIC
RESIDENT EPROM 2K x 8
DECODE
8
LOWER PROGRAM COUNTER(8)
INSTRUCTION REGISTER AND DECODER
CONTROL AND TIMING
WR WRITE STROBE
RD READ STROBE
SS SINGLE STEP
PSEN PROGRAM MEMORY ENABLE
ALE ADDRESS LATCH STROBE CYCLE CLOCK
XTAL 2
XTAL 1
OSCILLATOR XTAL
EA CPU MEMORY SEPARATE
PROG FROM EXPANDER STROBE
RESET INITIALIZE
INT INTERRUPT
FLAGS
ARITHMETIC LOGIC UNIT
(8)
DECIMAL ADJUST
2
HIGH PROGRAM COUNTER(4)
4
8
PORT 2 BUS BUFFER
8
PORT2 LATCH (HIGH 4)
4
PORT 2 LATCH (LOW 4) AND EXPANDER PORT I/O
4
TEMP REG(8)
ACCUMULATOR (8)
ACCUMULATOR LATCH
OSC FREQ
÷480
TEST 1
TIMER, EVENT COUNTER(8)
POWER SUPPLY
VPP PROGRAM SUPPLY (+5V)
VDD +5V
GND GND

SECTION 8
SPARE PARTS

8-1. PARTS INFORMATION

1. **Safety Related Component Warning**

   Components identified by shading on the schematic diagrams, exploded views and electrical spare parts list are critical to safe operation. Replace these components with Sony parts whose part numbers appear as shown in this manual or in service bulletins and service manual supplements published by Sony.

2. Replace Parts that are supplied from Sony Parts Center can sometimes have different shape and external appearance than what are actually used in equipment. This is due to **"accomodating the improved parts and/or engineering changes"** or **"standardization of genuine parts"**.

   - This manual's exploded views and electrical spare parts list are indicating the parts numbers of "the standardized genuine parts at present".
   - Regarding engineering parts changes in our engineering department, refer Sony service bulletins and service manual supplements.

3. **Printed Components in Bold-Face type** on the exploded views and electrical spare parts list are normally stocked for replacement purposes. The remaining parts are not normally required for routine service work. Orders for parts not shown in Bold-Face type will be processed, but allow for additional delivery time.

4. Item with no part number and/or no description are not stocked because they are seldom required for routine service.

5. **Abbreviation**

REF. NO.	DESCRIPTION	REF. NO.	DESCRIPTION	REF. NO.	DESCRIPTION
C	CAPACITOR	**IC**	IC	**RP**	RESISTOR BLOCK
CN	CONNECTOR	**J**	JACK	**RV**	VARIABLE RESISTOR
CV	VARIABLE CAPACITOR	**L**	INDUCTOR	**RY**	RELAY
D	DIODE	**LV**	VARIABLE INDUCTOR	**S**	SWITCH
DL	DELAY LINE	**M**	FAN	**T**	TRANSFORMER
F	FUSE	**Q**	TRANSISTOR	**X**	OSCILLATOR
FL	FILTER	**R**	RESISTOR		

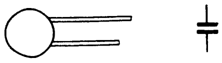
All capacitors are in micro farads unless otherwise specified.
All inductors are in micro henries unless otherwise specified.
All resistors are in ohms.

8-2. ELECTRICAL PARTS

Parts that are not listed in the "reference numbers order list" are shown in following table.
Reference numbers are omitted.

CAPACITOR

CERAMIC CAPACITOR **0.001μF through 0.1μF**
50WV

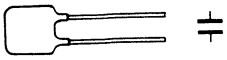


Parts No. 1-161-□□□-00

Value	Parts No. -□□□-	Substitute
0.001 μF	039	(1-102-074-00)
0.0012	040	
0.0015	041	
0.0018	042	
0.0022	043	(1-102-100-00)
0.0027	044	
0.0033	045	
0.0039	046	(1-102-124-00)
0.0047	047	
0.0056	048	
0.0068	049	
0.0082	050	

Value	Parts No. -□□□-	Substitute
0.01 μF	051	(1-101-118-00)
0.012	052	
0.015	053	
0.018	054	
0.022	055	(1-101-005-00)
0.027	056	
0.033	057	
0.039	058	
0.047	059	(1-101-006-00)
0.056	060	
0.068	061	
0.082	062	
0.1	063	

CERAMIC CAPACITOR



47PF through 0.15μF 50V

Parts No. 1-161-□□□-00

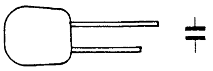
Value	Parts No. -□□□-
47P 5%	855
51P 5%	476
56P 5%	477
62P 5%	478
68P 5%	457
75P 5%	479
82P 5%	458
91P 5%	480
100P 5%	459
120P 5%	460
150P 5%	461

Value	Parts No. -□□□-
180P 5%	462
220P 5%	463
270P 5%	464
330P 5%	465
390P 5%	466
470P 5%	467
560P 5%	468
680P 5%	469
820P 5%	470
0.001μ 10%	471

Value	Parts No. -□□□-
0.0015μ 10%	852
0.0022μ 10%	853
0.0033μ 10%	854
0.0047μ 10%	472
0.01μ 10%	473
0.022μ 10%	474
0.033μ 10%	475
0.047μ 10%	481
0.068μ 10%	482
0.1μ 10%	483
0.15μ 10%	484

C, MICA

SILVERED MICA CAPACITOR

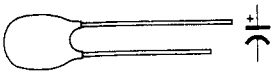


1 pF through 8.2 pF ±0.5 pF 500V
10 pF through 680 pF ±5% 500V
750 pF ±10% 500V

Parts No. 1-107-□□□-00

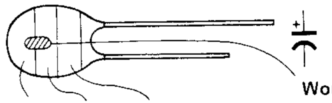
Value	Parts No. —□□□—	Value	Parts No. —□□□—	Value	Parts No. —□□□—	Value	Parts No. —□□□—
1 pF	019	12 pF	204	51 pF	164	220 pF	177
1.2	039	13	205	56	165	240	178
1.5	040	15	206	62	166	270	179
1.8	041	16	207	68	036	300	180
2.2	042	18	208	75	167	330	181
2.7	043	20	209	82	037	360	182
3.3	044	22	210	91	168	390	183
3.9	045	24	211	100	169	430	184
4.7	046	27	157	110	170	470	185
5.1	026	30	158	120	171	510	186
5.6	047	33	159	130	172	560	187
6.8	048	36	160	150	173	620	188
8.2	049	39	161	160	174	680	212
10	202	43	162	180	175	750	258
11	203	47	163	200	176		

TANTALUM CAPACITOR



0.01µF through 100µF ± 10%
3.15V through 35V

NOTE: The value of the parts that are marked by * in the below table are indicated by color code. (to the value with ±20%)



Working Voltage Color Code

Ex. BRN GRN BLU
1 5 6

15 x 10^6 pF = 15µF

BLK	RED	YEL	GRN	BLU	GRY	WHT
10V	35	6.3	16	20	25	3.15

Parts No. 1-131-□□□-00

Value		Parts No. —□□□—
0.01µ	35V	*396
0.015	35	*397
0.022	35	*398
0.033	35	*399
0.047	35	*400
0.068	35	*401
0.1	35	341
0.15	35	342
0.22	35	343
0.33	25	*409
	35	344
0.47	20	*412
	35	345
0.68	16	*415
	25	*410
	35	346
1.0	10	*418
	25	498

Value		Parts No. —□□□—
1.0µ	35V	347
1.5	6.3	*421
	20	499
	25	354
	35	348
2.2	3.15	*424
	16	500
	20	361
	25	355
	35	349
3.3	10	501
	16	368
	20	362
	25	356
	35	350
4.7	6.3	502
	10	375
	16	369

Value		Parts No. —□□□—
4.7µ	20V	363
	25	357
	35	351
6.8	3.15	503
	6.3	382
	10	376
	16	370
	20	364
	25	358
	35	352
10	3.15	389
	6.3	383
	10	377
	16	371
	20	365
	25	359
	35	353
15	3.15	390
	6.3	384

Value		Parts No. —□□□—
15µ	10V	378
	16	372
	20	366
	25	360
22	3.15	391
	6.3	385
	10	379
	16	373
	20	367
33	3.15	392
	6.3	386
	10	380
	16	374
47	3.15	393
	6.3	387
	10	381
68	3.15	394
	6.3	388
100	3.15	395

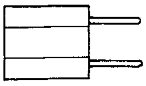
L, MICRO

INDUCTOR

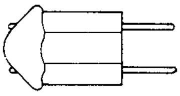
MICRO INDUCTOR

1 μH through 470 μH
±5%

-21



-00



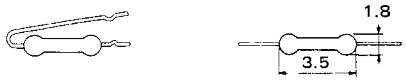
Parts No. 1-408-□□□-□□

Value	Parts No. —□□□—	Value	Parts No. —□□□—	Value	Parts No. —□□□—	Value	Parts No. —□□□—
1 μH	397	4.7 μH	405	22 μH	413	100 μH	421
1.2	398	5.6	406	27	414	120	422
1.5	399	6.8	407	33	415	150	423
1.8	400	8.2	408	39	416	180	424
2.2	401	10	409	47	417	220	425
2.7	402	12	410	56	418	270	426
3.3	403	15	411	68	419	330	427
3.9	404	18	412	82	420	390	428
						470	429

RESISTOR

CARBON RESISTOR (1/6W)

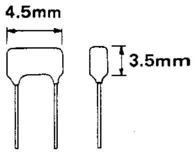
±5%, 1/6W, non-special type
2.2Ω through 1MΩ



Parts No. 1-247-□□□-00

Value	Parts No. —□□□—	Value	Parts No. —□□□—	Value	Parts No. —□□□—	Value	Parts No. —□□□—
1Ω	—	36Ω	796	1.2kΩ	833	43kΩ	870
1.1	—	39	797	1.3	834	47	871
1.2	—	43	798	1.5	835	51	872
1.3	—	47	799	1.6	836	56	873
1.5	—	51	800	1.8	837	62	874
1.6	—	56	801	2	838	68	875
1.8	—	62	802	2.2	839	75	876
2	—	68	803	2.4	840	82	877
2.2	767	75	804	2.7	841	91	878
2.4	768	82	805	3	842	100kΩ	879
2.7	769	91	806	3.3	843	110	880
3	770	100Ω	807	3.6	844	120	881
3.3	771	110	808	3.9	845	130	882
3.6	772	120	809	4.3	846	150	883
3.9	773	130	810	4.7	847	160	884
4.3	774	150	811	5.1	848	180	885
4.7	775	160	812	5.6	849	200	886
5.1	776	180	813	6.2	850	220	887
5.6	777	200	814	6.8	851	240	888
6.2	778	220	815	7.5	852	270	889
6.8	779	240	816	8.2	853	300	890
7.5	780	270	817	9.1	854	330	891
8.2	781	300	818	10kΩ	855	360	892
9.1	782	330	819	11	856	390	893
10Ω	783	360	820	12	857	430	894
11	784	390	821	13	858	470	895
12	785	430	822	15	859	510	896
13	786	470	823	16	860	560	897
15	787	510	824	18	861	620	898
16	788	560	825	20	862	680	899
18	789	620	826	22	863	750	900
20	790	680	827	24	864	820	901
22	791	750	828	27	865	910	902
24	792	820	829	30	866	1MΩ	903
27	793	910	830	33	867		
30	794	1kΩ	831	36	868		
33	795	1.1	832	39	869		

METAL FILM RESISTOR



± 1%, 1/8W

Parts No. 1-214-□□□-00 (10Ω through 33kΩ)
Parts No. 1-215-□□□-11 (36kΩ through 100kΩ)

Value	Parts No. −□□□−
10Ω	509
11	510
12	511
13	512
15	513
16	514
18	515
20	516
22	517
24	518
27	519
30	520
33	521
36	522
39	523
43	524
47	525
51	526
56	527
62	528
68	529
75	530
82	531
91	532

Value	Parts No. −□□□−
100Ω	533
110	534
120	535
130	536
150	537
160	538
180	539
200	540
220	541
240	542
270	543
300	544
330	545
360	546
390	547
430	548
470	549
510	550
560	551
620	552
680	553
750	554
820	555
910	556

Value	Parts No. −□□□−
1.0kΩ	557
1.1	558
1.2	559
1.3	560
1.5	561
1.6	562
1.8	563
2.0	564
2.2	565
2.4	566
2.7	567
3.0	568
3.3	569
3.6	570
3.9	571
4.3	572
4.7	573
5.1	574
5.6	575
6.2	576
6.8	577
7.5	578
8.2	579
9.1	580

Value	Parts No. −□□□−
10kΩ	581
11	582
12	583
13	584
15	585
16	586
18	587
20	588
22	589
24	590
27	591
30	592
33	593

36kΩ	819
39	820
43	821
47	822
51	823
56	824
62	825
68	826
75	827
82	828
91	829
100	830

AT-26 BOARD

Ref. No.	Parts No.	Description
	A-7513-183-A	MOUNTED CIRCUIT BOARD "AT-26"
C1	1-130-495-00	MYLAR 0.1 5% 50V
C2	1-130-495-00	MYLAR 0.1 5% 50V
C3	1-130-495-00	MYLAR 0.1 5% 50V
C5	1-130-495-00	MYLAR 0.1 5% 50V
C6	1-130-471-00	MYLAR 0.001 5% 50V
C7	1-130-471-00	MYLAR 0.001 5% 50V
C21	1-102-112-00	CERAMIC 330PF 10% 50V
C22	1-130-471-00	MYLAR 0.001 5% 50V
C24	1-130-471-00	MYLAR 0.001 5% 50V
C25	1-130-471-00	MYLAR 0.001 5% 50V
C32	1-102-112-00	CERAMIC 330PF 10% 50V
C40	1-130-471-00	MYLAR 0.001 5% 50V
C42	1-125-393-11	DOUBLE LAYERS 470000 5.5V
C43	1-125-393-11	DOUBLE LAYERS 470000 5.5V
CN1	1-562-730-11	RECEPTACLE, 90P
D2	8-719-815-55	1S1555
D3	8-719-815-55	1S1555
D4	8-719-815-55	1S1555
D5	8-719-815-55	1S1555
D6	8-719-815-55	1S1555
D7	8-719-101-98	1SS97
D8	8-719-815-55	1S1555
D9	8-719-915-20	FC52M
D10	8-719-815-55	1S1555
D11	8-719-815-55	1S1555
IC1	8-759-900-64	TL064CN: TI
IC2	8-759-990-62	TL062CP: TI
IC3	8-759-240-16	TC4016BP: TOSHIBA
IC4	8-759-240-51	TC4051BP: TOSHIBA
IC5	8-759-101-14	μPD82C43C: NEC
IC6	8-759-768-26	μPD8749HD-CCUMT12: NEC
IC7	8-759-220-00	TC40H000P: TOSHIBA
IC8	8-759-200-08	TC40H367P: TOSHIBA
IC9	8-759-205-75	TC5517APL: TOSHIBA
IC10	8-759-221-75	TC40H175P: TOSHIBA
IC11	8-759-221-75	TC40H175P: TOSHIBA
IC12	8-759-768-27	μPD8749HD-CCUCM6: NEC
IC13	8-759-241-63	TC40163BP: TOSHIBA
IC14	8-759-240-30	TC4030BP: TOSHIBA
IC15	8-719-800-74	TLP651-VIDEO: TOSHIBA
IC16	8-719-800-74	TLP651-VIDEO: TOSHIBA
IC17	8-759-101-14	μPD82C43C: NEC
IC18	8-759-101-14	μPD82C43C: NEC
IC19	8-759-240-40	TC4040BP: TOSHIBA
IC20	8-759-220-00	TC40H000P: TOSHIBA
IC21	8-759-220-00	TC40H000P: TOSHIBA
IC22	8-759-101-14	μPD82C43C: NEC
IC23	8-759-746-88	μPD8749HD-CCUMS3: NEC
IC24	8-759-140-14	μPD4014BC: NEC
IC25	8-759-240-15	TC4015BP: TOSHIBA
IC26	8-759-240-15	TC4015BP: TOSHIBA
IC27	8-759-220-04	TC40H004P: TOSHIBA
IC28	8-759-240-53	TC4053BP: TOSHIBA
IC29	8-759-220-08	TC40H367P: TOSHIBA
IC30	8-759-768-32	27C64-CROM08-25: HITACHI
IC31	8-759-220-04	TC40H004P: TOSHIBA
IC32	8-759-220-00	TC40H000P: TOSHIBA
IC33	8-759-241-63	TC40163BP: TOSHIBA
IC34	8-759-241-63	TC40163BP: TOSHIBA
IC35	8-759-220-00	TC40H000P: TOSHIBA
IC36	8-759-140-14	μPD4014BC: NEC
IC37	8-759-990-62	TL062CP: TI
IC38	8-759-926-30	AM26LS30PC: ADVANCED MICRO DEVICES
IC39	8-759-240-24	TC4024BP: TOSHIBA
IC40	8-759-240-63	TC4063BP: TOSHIBA
IC41	8-759-220-00	TC40H000P: TOSHIBA
IC42	8-759-131-11	μPC311C: NEC
IC43	8-759-200-44	TC40H245P: TOSHIBA
IC44	8-759-708-05	NJM78L05A: JRC
Q1	8-729-178-54	2SC2785
Q2	8-729-117-54	2SA1175
Q3	8-729-178-54	2SC2785
Q4	8-729-178-54	2SC2785
Q5	8-729-178-54	2SC2785
Q6	8-729-117-54	2SA1175
Q7	8-729-178-54	2SC2785
Q8	8-729-117-54	2SA1175
Q9	8-729-800-42	2SK152
Q10	8-729-800-42	2SK152
Q11	8-729-266-93	2SC2669
Q12	8-729-117-54	2SA1175
Q13	8-729-117-54	2SA1175

Ref. No.	Parts No.	Description
RP1	1-231-387-00	LADDER 25K
RP2	1-235-052-00	33K
RP3	1-235-052-00	33K
S1	1-554-399-00	TOGGLE
S2	1-553-634-00	ROTARY
S3	1-553-634-00	ROTARY
S4	1-554-076-00	SLIDE
S5	1-554-076-00	SLIDE
X1	1-527-941-00	10.944MHz

AU-58 BOARD

Ref. No.	Parts No.	Description
	A-7513-189-A	MOUNTED CIRCUIT BOARD "AU-58"
C2	1-124-151-00	ELECT 33 20% 35V
C6	1-124-159-00	ELECT 100 20% 50V
C7	1-124-159-00	ELECT 100 20% 50V
C9	1-124-151-00	ELECT 33 20% 35V
C14	1-124-151-00	ELECT 33 20% 35V
C26	1-124-151-00	ELECT 33 20% 35V
C27	1-123-819-00	ELECT 33 20% 25V
C36	1-123-611-00	ELECT 1 20% 50V
C37	1-123-611-00	ELECT 1 20% 50V
C39	1-124-151-00	ELECT 33 20% 35V
C43	1-124-159-00	ELECT 100 20% 50V
C44	1-124-159-00	ELECT 100 20% 50V
C46	1-124-151-00	ELECT 33 20% 35V
C57	1-124-145-00	ELECT 330 20% 16V
C58	1-124-145-00	ELECT 330 20% 16V
C65	1-124-145-00	ELECT 330 20% 16V
C66	1-124-145-00	ELECT 330 20% 16V
C67	1-124-151-00	ELECT 33 20% 35V
C69	1-124-151-00	ELECT 33 20% 35V
C72	1-124-153-11	ELECT 100 20% 35V
C83	1-124-151-00	ELECT 33 20% 35V
C84	1-123-617-00	ELECT 10 20% 16V
CN1	1-562-730-11	RECEPTACLE, 90P
D1	8-719-162-07	RD6.2EB
D2	8-719-815-55	1S1555
D3	8-719-815-55	1S1555
D4	8-719-930-12	EQB01-12Z
D6	8-719-815-55	1S1555
D7	8-719-815-55	1S1555
D8	8-719-815-55	1S1555
D9	8-719-815-55	1S1555
D10	8-719-815-55	1S1555
D11	8-719-815-55	1S1555
D12	8-719-815-55	1S1555
D13	8-719-815-55	1S1555
D14	8-719-815-55	1S1555
D15	8-719-120-02	PS2002B
D16	8-719-120-02	PS2002B
D17	8-719-815-55	1S1555
D18	8-719-815-55	1S1555
D19	8-719-815-55	1S1555
D20	8-719-815-55	1S1555
D21	8-719-815-55	1S1555
D22	8-719-815-55	1S1555
D25	8-719-182-07	RD8.2EB
D26	8-719-182-07	RD8.2EB
D27	8-719-815-55	1S1555
D28	8-719-815-55	1S1555
D31	8-719-930-12	EQB01-12Z

Ref. No.	Parts No.	Description
IC1	8-759-745-56	NJM4556D: JRC
IC2	8-759-745-56	NJM4556D: JRC
IC3	8-759-906-01	TL601CP: TI
IC4	8-759-906-01	TL601CP: TI
IC5	8-759-745-56	NJM4556D: JRC
IC6	8-759-906-07	TL607CP: TI
IC7	8-759-990-62	TL062CP: TI
IC8	8-759-745-56	NJM4556D: JRC
IC9	8-759-906-07	TL607CP: TI
IC10	8-759-745-56	NJM4556D: JRC
IC11	8-759-745-56	NJM4556D: JRC
IC12	8-759-745-56	NJM4556D: JRC
IC13	8-759-906-01	TL601CP: TI
IC14	8-759-906-01	TL601CP: TI
IC15	8-759-745-60	NJM4560D
IC16	8-759-745-60	NJM4560D: JRC
IC17	8-759-745-56	NJM4556D: JRC
IC18	8-759-745-60	NJM4560D: JRC
IC19	8-759-745-60	NJM4560D: JRC
IC20	8-759-745-56	NJM4556D: JRC
IC21	8-759-990-62	TL062CP: TI
IC22	8-759-108-05	μPC78L05A: NEC
IC23	8-759-108-05	μPC78L05A: NEC
IC24	8-759-906-07	TL607CP: TI
IC25	8-759-906-07	TL607CP: TI
IC26	8-759-745-56	NJM4556D: JRC
IC27	8-729-745-56	NJM4556D: JRC
Q1	8-729-105-74	2SK523-M1
Q2	8-729-113-33	2SB733
Q3	8-729-105-74	2SK523-M1
Q4	8-729-105-74	2SK523-M1
Q5	8-729-113-33	2SB733
Q7	8-729-178-54	2SC2785
Q8	8-729-177-43	2SD774
Q9	8-729-177-43	2SD774
RV1	1-224-942-00	METAL 50K
RV2	1-224-930-00	METAL 10K
RV3	1-224-940-00	METAL 10K
RV4	1-224-940-11	METAL 10K
RV5	1-224-942-00	METAL 50K

Ref. No.	Parts No.	Description
RV6	1-224-930-00	METAL 10K
RV7	1-224-940-00	METAL 10K
RV8	1-224-930-00	METAL 10K
RV9	1-224-930-00	METAL 10K
RV10	1-226-101-00	METAL 1M
RV11	1-224-943-00	METAL 100K
RV12	1-224-931-00	METAL 20K
S1	1-554-078-00	SLIDE
S2	1-554-076-00	SLIDE
S3	1-554-078-00	SLIDE
S4	1-554-078-00	SLIDE
S5	1-554-076-00	SLIDE
S6	1-554-076-00	SLIDE
S7	1-554-078-00	SLIDE
S8	1-554-078-00	SLIDE
S9	1-554-078-00	SLIDE
S10	1-554-076-00	SLIDE
S11	1-554-078-00	SLIDE
S12	1-554-076-00	SLIDE
T1	1-426-038-00	AUDIO
T2	1-426-038-00	AUDIO
T3	1-427-571-11	AUDIO
T4	1-426-038-00	AUDIO
T5	1-426-038-00	AUDIO
T6	1-448-224-11	DC-DC CONVERTER
T7	1-427-571-11	DC-DC CONVERTER

CN-13 BOARD

	1-615-213-11	PRINTED CIRCUIT BOARD "CN-13"
⚠CN1	1-564-977-11	RECEPTACLE, 2P
⚠CN2	1-564-978-11	RECEPTACLE, 3P
⚠	1-561-876-00	PLUG HOUSING 3P
⚠	**1-560-764-21**	**PLUG CONTACT**
⚠CN3	1-564-979-11	RECEPTACLE, 4P
	1-560-764-21	**PLUG CONTACT**

CN-14, CNB-3, EN-31/31A

CN-14 BOARD

Ref. No.	Parts No.	Description
	1-615-214-11	PRINTED CIRCUIT BOARD "CN-14"
⚠CN1	1-564-975-11	RECEPTACLE, 6P
	1-561-877-00	PLUG HOUSING
	1-560-764-21	**PLUG CONTACT**
⚠CN2	1-508-871-00	RECEPTACLE, 6P
	1-562-821-11	PLUG HOUSING 6P
	1-560-764-21	**PLUG CONTACT**
⚠CN3	1-564-975-11	RECEPTACLE, 6P
	1-561-877-00	PLUG HOUSING
	1-560-764-21	**PLUG CONTACT**
CN4	1-564-995-11	RECEPTACLE, 10P MALE
	1-560-764-21	**PLUG CONTACT**
CN5	1-564-995-11	RECEPTACLE, 10P MALE
	1-560-764-21	**PLUG CONTACT**

CNB-3 BOARD

Ref. No.	Parts No.	Description
	1-615-210-12	PRINTED CIRCUIT BOARD "CNB-3"
CN103	1-506-479-11	RECEPTACLE, 14P
	1-562-185-11	PLUG HOUSING 14P
	1-564-681-11	PLUG CONTACT
CN144	1-509-473-11	RECEPTACLE, 8P
	1-562-153-11	PLUG HOUSING 8P
	1-564-681-11	PLUG CONTACT
RV1	**1-226-809-00**	**METAL 5K "PGM"**
RV2	**1-226-809-00**	**METAL 5K "INCOM"**
S1	**1-554-355-11**	**TOGGLE**
S2	**1-554-356-11**	**TOGGLE**

EN-31/31A BOARD

Ref. No.	Parts No.	Description
	A-7513-186-A	MOUNTED CIRCUIT BOARD "EN-31" (NTSC)
	A-7513-187-A	MOUNTED CIRCUIT BOARD "EN-31A" (PAL)
C268	**1-124-273-11**	**ELECT 3.3 20% 50V**
C269	**1-124-273-11**	**ELECT 3.3 20% 50V**
CN1	1-562-730-11	RECEPTACLE, 90P
CV1	**1-141-291-11**	**20PF**
CV2	**1-141-291-11**	**20PF**
CV3	**1-141-299-11**	**6PF** Ser. No. 10301 and higher (J) 20601 and higher (UC) 30501 and higher (AE)
CV4	**1-141-300-11**	**3PF** Ser. No. 10301 and higher (J) 20601 and higher (UC) 30501 and higher (AE)
D1	**8-719-100-01**	**RD2.0EB**
D2	**8-719-815-55**	**1S1555**
D4	**8-719-815-55**	**1S1555**
D5	**8-719-100-01**	**RD2.0EB**
D6	**8-719-815-55**	**1S1555**
D7	**8-719-815-55**	**1S1555**
D8	**8-719-100-01**	**RD2.0EB**
D9	**8-719-815-55**	**1S1555**
D10	**8-719-815-55**	**1S1555**
D11	**8-719-136-07**	**RD3.6EB**
D12	**8-719-136-07**	**RD3.6EB**
DL1	**1-415-474-11**	**45nS (NTSC)**
DL1	**1-415-437-11**	**90nS (PAL)**
DL2	**1-415-417-11**	**790nS (NTSC)**
DL2	**1-415-304-00**	**790nS (PAL)**
DL3	**1-415-302-00**	**120nS (PAL)**
DL4	**1-415-290-00**	**410nS (NTSC)**
DL5	**1-415-302-00**	**120nS (PAL)**
IC1	**8-741-131-90**	**BX1319: SONY**
IC2	**8-749-931-50**	**BX315: SONY**
IC3	**8-759-708-05**	**NJM78L05A: JRC**
IC4	**8-749-931-50**	**BX315: SONY**
IC5	**8-759-700-65**	**NJM79L05A: JRC**

Ref. No.	Parts No.	Description
IC6	8-749-931-50	BX315: SONY
IC8	8-759-911-77	CX7968A: SONY
IC9	8-759-240-53	TC4053BP: TOSHIBA
IC10	8-759-240-53	TC4053BP: TOSHIBA
IC11	8-741-130-50	BX1305: SONY
IC12	8-759-990-62	TL062CP: TI
IC13	8-741-130-40	BX1304: SONY
IC14	8-741-130-50	BX1305: SONY
IC15	8-741-130-40	BX1304: SONY
IC16	8-741-131-90	BX1319: SONY
IC17	8-741-131-90	BX1319: SONY
IC18	8-741-131-90	BX1319: SONY
IC19	8-759-015-95	MC1595L: MOTOROLA
IC20	8-759-990-62	TL062CP: TI
IC21	8-741-130-50	BX1305: SONY
IC22	8-741-131-90	BX1319: SONY
IC23	8-749-931-50	BX315: SONY
IC24	8-759-990-62	TL062CP: TI
IC25	8-759-240-53	TC4053BP: TOSHIBA
IC26	8-759-015-95	MC1595L: MOTOROLA
IC27	8-741-130-50	BX1305: SONY
IC28	8-759-990-62	TL062CP: TI
IC29	8-759-990-62	TL062CP: TI
IC30	8-759-015-95	MC1595L: MOTOROLA
IC31	8-741-130-50	BX1305: SONY
IC32	8-759-990-62	TL062CP: TI
IC33	8-759-990-62	TL062CP: TI
IC34	8-759-906-59	CX22017: SONY
IC35	8-759-906-13	μA79M05AHC: FSC
IC36	8-741-130-50	BX1305: SONY
IC37	8-741-130-50	BX1305: SONY
IC38	8-741-130-50	BX1305: SONY
IC39	8-741-130-50	BX1305: SONY
L33	1-408-849-00	MICRO 330
L35	1-408-145-00	COIL 19
L41	1-408-851-00	MICRO 560
LV1	1-408-845-00	100
LV2	1-408-845-00	100
LV3	1-408-844-00	22

Ref. No.	Parts No.	Description
Q1	8-729-178-54	2SC2785
Q2	8-729-178-54	2SC2785
Q3	8-729-178-54	2SC2785
Q4	8-729-178-54	2SC2785
Q6	8-729-178-54	2SC2785
Q7	8-729-364-12	2SC641K
Q8	8-729-178-54	2SC2785
Q9	8-729-364-12	2SC641K
Q10	8-729-178-54	2SC2785
Q11	8-729-178-54	2SC2785
Q12	8-729-178-73	2SC2787
Q13	8-729-364-12	2SC641K
Q14	8-729-117-54	2SA1175
Q15	8-729-117-54	2SA1175
Q16	8-729-117-54	2SA1175
Q17	8-729-117-54	2SA1175
Q18	8-729-117-54	2SA1175
Q19	8-729-117-54	2SA1175
Q20	8-279-178-54	2SC2785
Q21	8-279-178-54	2SC2785
Q22	8-279-178-54	2SC2785
Q23	8-729-802-43	2SK125-3
Q24	8-729-117-54	2SA1175
Q25	8-279-178-54	2SC2785
Q26	8-729-117-54	2SA1175
Q27	8-279-178-54	2SC2785
Q28	8-279-178-54	2SC2785
Q29	8-729-266-83	2SC2668
Q30	8-729-266-83	2SC2668
Q31	8-729-266-83	2SC2668
Q32	8-279-178-54	2SC2785
Q33	8-279-178-54	2SC2785
Q34	8-729-110-53	2SA1005
Q35	8-729-110-53	2SA1005
Q36	8-729-117-54	2SA1175
Q37	8-279-178-54	2SC2785
Q38	8-279-178-54	2SC2785
Q39	8-729-117-54	2SA1175
Q40	8-729-802-43	2SK125-3
Q41	8-729-117-54	2SA1175
Q42	8-729-178-54	2SC2785
Q43	8-729-266-83	2SC2668
Q44	8-729-110-53	2SA1005
Q45	8-729-178-54	2SC2785
Q46	8-729-802-43	2SK125-3
Q47	8-729-266-83	2SC2668

Ref. No.	Parts No.	Description
Q48	8-729-266-83	2SC2668
Q49	8-729-178-73	2SC2787
Q50	8-729-178-73	2SC2787
Q51	8-729-802-43	2SK125-3
Q52	8-279-178-54	2SC2785
Q53	8-279-178-54	2SC2785
Q54	8-729-110-53	2SA1005
Q55	8-729-110-53	2SA1005
Q56	8-279-178-54	2SC2785
Q57	8-729-802-43	2SK125-3
Q58	8-729-802-43	2SK125-3
Q59	8-729-178-73	2SC2787
Q60	8-729-178-73	2SC2787 (NTSC)
Q61	8-729-178-73	2SC2787 (NTSC)
Q62	8-729-178-73	2SC2787
Q63	8-729-802-43	2SK125-3
Q64	8-729-178-54	2SC2785
Q65	8-729-110-53	2SA1005
Q66	8-729-178-54	2SC2785
Q67	8-729-110-53	2SA1005
Q68	8-729-178-54	2SC2785
Q69	8-729-266-83	2SC2668
Q70	8-729-266-83	2SC2668
Q71	8-729-178-73	2SC2787
Q72	8-729-178-73	2SC2787
Q73	8-729-802-43	2SK125-3
Q74	8-729-178-54	2SC2785
Q75	8-729-178-54	2SC2785
Q76	8-729-110-53	2SA1005
Q77	8-729-110-53	2SA1005
Q78	8-729-117-54	2SA1175
Q79	8-729-117-54	2SA1175
Q80	8-729-178-54	2SC2785
Q81	8-729-802-43	2SK125-3
Q82	8-729-802-43	2SK125-3
Q83	8-729-178-73	2SC2787
Q84	8-729-178-73	2SC2787
Q85	8-729-178-73	2SC2787
Q86	8-729-802-43	2SK125-3
Q87	8-729-110-53	2SA1005
Q88	8-729-178-73	2SC2787
Q89	8-729-110-53	2SA1005
Q90	8-729-178-73	2SC2787
Q91	8-729-178-73	2SC2787
Q92	8-729-117-54	2SA1175
Q93	8-729-802-43	2SK125-3
Q94	8-729-117-54	2SA1175
Q95	8-729-117-54	2SA1175

Ref. No.	Parts No.	Description
R18	1-215-476-00	METAL 200K 1% 1/6W (NTSC)
R19	1-215-476-00	METAL 200K 1% 1/6W (NTSC)
R361	1-215-476-00	METAL 200K 1% 1/6W (PAL)
R426	1-215-476-00	METAL 200K 1% 1/6W
R428	1-215-476-00	METAL 200K 1% 1/6W
RP1	1-235-528-11	MATRIX
RP2	1-235-527-11	MATRIX (PAL)
RP3	1-235-530-11	MATRIX
RP4	1-235-529-11	MATRIX (NTSC)
RP4	1-235-526-11	MATRIX (PAL)
RP5	1-235-526-11	MATRIX
RP6	1-235-527-11	MATRIX
RV1	1-228-458-00	METAL 5K
RV2	1-228-457-00	METAL 2K
RV3	1-228-455-00	METAL 500
RV4	1-228-455-00	METAL 500
RV5	1-228-455-00	METAL 500
RV6	1-228-455-00	METAL 500
RV7	1-228-456-00	METAL 1K
RV8	1-228-456-00	METAL 1K
RV9	1-228-456-00	METAL 1K
RV10	1-228-455-00	METAL 500
RV11	1-228-456-00	METAL 1K
RV12	1-228-456-00	METAL 1K
RV13	1-228-458-00	METAL 5K Ser. No. 10001~10205 (J) 20001~20505 (UC) 30001~30410 (AE)
RV14	1-228-459-00	METAL 10K Ser. No. 10001~10205 (J) 20001~20505 (UC) 30001~30410 (AE)
RV15	1-228-456-00	METAL 1K
RV16	1-228-462-00	METAL 100K
RV17	1-228-457-00	METAL 2K
RV18	1-228-462-00	METAL 100K
RV19	1-228-457-00	METAL 2K
RV20	1-224-930-00	METAL 10K
RV21	1-224-927-00	METAL 1K Ser. No. 10001~10010 (J) 20001~20120 (UC) 30001~(AE)
	1-224-926-00	METAL 500 Ser. No. 10101 and higher (J) 20201 and higher (UC)
RV22	1-228-456-00	METAL 1K
RV23	1-228-456-00	METAL 1K
RV24	1-228-458-00	METAL 5K
RV25	1-228-459-00	METAL 10K

Ref. No.	Parts No.	Description
RV26	1-228-457-00	METAL 2K
RV27	1-228-465-00	METAL 1M
RV28	1-228-457-00	METAL 2K
RV29	1-228-460-00	METAL 20K
RV30	1-226-322-00	METAL 1K
RV32	1-228-465-00	METAL 1M
RV34	1-228-460-00	METAL 20K
RV35	1-226-369-00	METAL 5K
RV36	1-228-457-00	METAL 2K
RV37	1-228-458-00	METAL 5K (NTSC)
RV38	1-228-459-00	METAL 10K (NTSC)
RV39	1-224-927-00	METAL 1K
RV40	1-228-459-00	METAL 10K (NTSC)
RV41	1-228-456-00	METAL 1K
RV42	1-228-461-00	METAL 50K
S1	1-554-399-11	TOGGLE
S2	1-554-399-11	TOGGLE
S3	1-554-076-00	SLIDE
S4	1-554-076-00	SLIDE

FU-25 BOARD

Ref. No.	Parts No.	Description
⚠	A-7520-204-A	MOUNTED CIRCUIT BOARD "FU-25"
	1-533-131-00	HOLDER, FUSE
⚠CN1	1-564-792-11	WAFER ASSY 5P
	1-560-764-21	PLUG CONTACT
⚠CN2	1-564-791-11	WAFER ASSY 4P
	1-560-764-21	PLUG CONTACT
⚠CN3	1-526-572-00	VOLTAGE SELECT
CN4	1-564-979-11	RECEPTACLE, 4P
	1-560-764-21	PLUG CONTACT
D1	8-719-147-07	RD4.7EB
D2	8-719-907-25	ERA84-009
D3	8-719-815-55	1S1555
⚠F1	1-532-325-00	TIME-LAG 250V 4A
⚠F2	1-532-325-00	TIME-LAG 250V 4A
⚠F3	1-532-325-00	TIME-LAG 250V 4A
⚠F4	1-532-325-00	TIME-LAG 250V 4A
Q1	8-729-177-43	2SD774
⚠RY1	1-515-576-11	14000Ω 240V
⚠RY2	1-515-576-11 1-515-510-00	14000Ω 240V Ser. No. 10001~10010 (J) 20001~20014 (UC) 30001~30010 (AE) 1100Ω 24V Ser. No. 10101 and higher (J) 20101 and higher (UC) 30101 and higher (AE)
⚠RY3	1-515-510-00	1100Ω 24V Ser. No. 10101~10010 (J) 20101~20014 (UC) 30101~30010 (AE)

LE-29 BOARD

Ref. No.	Parts No.	Description
	A-7520-205-A	MOUNTED CIRCUIT BOARD "LE-29"
	1-615-200-12	PRINTED CIRCUIT BOARD "LE-29"
D1	8-719-921-05	EBG5534S
D2	9-719-921-05	EBG5534S
D3	8-719-921-01	EBR5534S
D4	8-719-921-01	EBR5534S
D5	8-719-921-01	EBR5534S
D6	8-719-921-01	EBR5534S

MB-91 BOARD

Ref. No.	Parts No.	Description
	A-7513-180-A	MOUNTED CIRCUIT BOARD "MB-91"
CN1	1-562-769-11	RECEPTACLE, 90P
CN2	1-562-769-11	RECEPTACLE, 90P
CN3	1-562-769-11	RECEPTACLE, 90P
CN4	1-562-769-11	RECEPTACLE, 90P
CN5	1-562-769-11	RECEPTACLE, 90P

Ref. No.	Parts No.	Description
CN6	1-562-769-11	RECEPTACLE, 90P
CN7	**1-561-779-00**	**RECEPTACLE, 50P**
CN8	**1-560-933-00**	**RECEPTACLE, 18P**
	1-561-552-00	**PLUG HOUSING 18P**
	1-560-767-00	PLUG CONTACT
	1-560-768-00	PLUG CONTACT
	1-508-944-00	**PIN**
CN9	1-564-864-11	RECEPTACLE, 24P
	1-561-592-00	**PLUG HOUSING 24P**
	1-560-767-00	PLUG CONTACT
	1-560-768-00	PLUG CONTACT
	1-508-944-00	**PIN**
CN10	1-564-264-11	RECEPTACLE, 8P
	1-561-176-00	**PLUG HOUSING 8P**
	1-560-767-00	PLUG CONTACT
	1-560-768-00	PLUG CONTACT
	1-508-944-00	**PIN**
CN11	1-564-264-11	RECEPTACLE, 8P
	1-561-176-00	**PLUG HOUSING 8P**
	1-560-767-00	PLUG CONTACT
	1-560-768-00	PLUG CONTACT
	1-508-944-00	**PIN**
CN12	1-564-080-00	RECEPTACLE, 12P
	1-561-178-00	**PLLUG HOUSING 12P**
	1-560-767-00	PLUG CONTACT
	1-560-768-00	PLUG CONTACT
	1-508-944-00	**PIN**
CN13	1-564-861-11	RECEPTACLE, 16P
	1-561-035-11	**PLUG HOUSING 16P**
	1-560-767-00	PLUG CONTACT
	1-560-768-00	PLUG CONTACT
	1-508-944-00	**PIN**
CN14	1-564-860-11	RECEPTACLE, 14P
	1-561-036-00	**PLUG HOUSING 14P**
	1-560-767-00	PLUG CONTACT
	1-560-768-00	PLUG CONTACT
	1-508-944-00	**PIN**
CN15	1-564-263-00	RECEPTACLE, 6P
	1-561-175-00	**PLUG HOUSING 6P**
	1-560-767-00	PLUG CONTACT
	1-560-768-00	PLUG CONTACT
	1-508-944-00	**PIN**
CN16	1-564-079-00	RECEPTACLE, 10P
	1-561-177-00	**PLUG HOUSING 10P**
	1-560-767-00	PLUG CONTACT
	1-560-768-00	PLUG CONTACT
	1-508-944-00	**PIN**
CN17	1-564-264-11	RECEPTACLE, 8P
	1-561-176-00	**PLUG HOUSING 8P**
	1-560-767-00	PLUG CONTACT
	1-560-768-00	PLUG CONTACT
	1-508-944-00	**PIN**
CN18	1-564-080-00	RECEPTACLE, 12P
	1-561-178-00	**PLUG HOUSING 12P**
	1-560-767-00	PLUG CONTACT
	1-508-944-00	**PIN**
CN19	1-564-079-00	RECEPTACLE, 10P
	1-561-177-00	**PLUG HOUSING 10P**
	1-560-767-00	PLUG CONTACT
	1-560-768-00	PLUG CONTACT
	1-508-944-00	**PIN**
CN20	1-564-263-00	RECEPTACLE, 6P
	1-561-175-00	**PLUG HOUSING 6P**
	1-560-767-00	PLUG CONTACT
	1-560-768-00	PLUG CONTACT
	1-508-944-00	**PIN**
CN21	1-564-079-00	RECEPTACLE, 10P
	1-561-177-00	**PLUG HOUSING 10P**
	1-560-767-00	PLUG CONTACT
	1-560-768-00	PLUG CONTACT
	1-508-944-00	**PIN**
CN22	1-564-080-00	RECEPTACLE, 12P
	1-561-178-00	**PLUG HOUSING 12P**
	1-560-767-00	PLUG CONTACT
	1-560-768-00	PLUG CONTACT
	1-508-944-00	**PIN**
CN23	1-564-861-11	RECEPTACLE, 16P
	1-561-035-00	**PLUG HOUSING 16P**
	1-560-767-00	PLUG CONTACT
	1-560-768-00	PLUG CONTACT
	1-508-944-00	**PIN**
CN24	1-564-863-11	RECEPTACLE, 22P
	1-561-591-00	**PLUG HOUSING 22P**
	1-560-767-00	PLUG CONTACT
	1-560-768-00	PLUG CONTACT
	1-508-944-00	**PIN**
CN25	1-564-079-00	RECEPTACLE, 10P
	1-561-177-00	**PLUG HOUSING 10P**
	1-560-767-00	PLUG CONTACT
	1-560-768-00	PLUG CONTACT
	1-508-944-00	**PIN**
CN26	1-508-901-21	RECEPTACLE, 3P

PS ASSY

⚠	A-7615-170-A	PS ASSY "PS-69" "PS-70"

PS-69 BOARD

Ref. No.	Parts No.	Description
C1	**1-124-636-11**	**ELECT 3300 20% 25V**
C2	**1-124-636-11**	**ELECT 3300 20% 25V**
C3	**1-124-636-11**	**ELECT 3300 20% 25V**
C4	**1-124-636-11**	**ELECT 3300 20% 25V**
C5	**1-124-636-11**	**ELECT 3300 20% 25V**
C6	**1-124-636-11**	**ELECT 3300 20% 25V**
C7	**1-124-636-11**	**ELECT 3300 20% 25V**
C8	**1-124-636-11**	**ELECT 3300 20% 25V**
C9	**1-124-636-11**	**ELECT 3300 20% 25V**
C10	**1-124-637-11**	**ELECT 1000 20% 50V**
C11	**1-124-637-11**	**ELECT 1000 20% 50V**
C12	**1-124-637-11**	**ELECT 1000 20% 50V**
C13	**1-124-637-11**	**ELECT 1000 20% 50V**
C14	**1-124-637-11**	**ELECT 1000 20% 50V**
C15	**1-124-637-11**	**ELECT 1000 20% 50V**
C16	**1-124-637-11**	**ELECT 1000 20% 50V**
C17	**1-124-637-11**	**ELECT 1000 20% 50V**
C21	**1-124-145-00**	**ELECT 330 20% 16V**
C22	**1-130-193-00**	**FILM 0.47 5% 100V**
C26	**1-124-145-00**	**ELECT 330 20% 16V**
C27	**1-130-193-00**	**FILM 0.47 5% 100V**
C28	**1-124-444-00**	**ELECT 220 20% 10V**
C31	**1-124-142-00**	**ELECT 470 20% 10V**
C32	**1-130-193-00**	**FILM 0.47 5% 100V**
C33	**1-124-478-11**	**ELECT 100 20% 25V**
C36	**1-124-153-11**	**ELECT 100 20% 35V**
C37	**1-130-193-00**	**FILM 0.47 5% 100V**
C44	**1-124-151-00**	**ELECT 33 20% 35V**
C45	**1-124-151-00**	**ELECT 33 20% 35V**
C46	**1-124-151-00**	**ELECT 33 20% 35V**
C48	**1-130-193-00**	**FILM 0.47 5% 100V**
C49	**1-124-153-11**	**ELECT 100 20% 35V**
C50	**1-124-637-11**	**ELECT 1000 20% 50V**
C51	**1-124-483-00**	**ELECT 47 20% 35V**
C56	**1-123-363-00**	**ELECT 470 20% 50V**
C58	**1-123-363-00**	**ELECT 470 20% 50V**
C59	**1-130-193-00**	**FILM 0.47 5% 100V**
C60	**1-130-820-11**	**FILM 0.1 10% 630V**
C61	**1-130-820-11**	**FILM 0.1 10% 630V**
C62	**1-130-820-11**	**FILM 0.1 10% 630V**
C63	**1-130-820-11**	**FILM 0.1 10% 630V**
C64	**1-130-820-11**	**FILM 0.1 10% 630V**
C65	**1-130-820-11**	**FILM 0.1 10% 630V**

Ref. No.	Parts No.	Description
CN1	1-564-765-11	RECEPTACLE, 10P
	1-560-764-21	**PLUG CONTACT**
	1-562-824-11	PLUG HOUSING 10P
CN2	1-564-761-11	RECEPTACLE, 6P
	1-562-821-11	PLUG HOUSING 6P
	1-560-764-21	PLUG CONTACT
CN3	1-564-761-11	RECEPTACLE, 6P
CN4	1-564-762-11	RECEPTACLE, 7P
CN5	1-564-867-11	RECEPTACLE, 30P
CN6	1-564-856-11	RECEPTACLE, 42P
CN7	1-564-856-11	RECEPTACLE, 42P
D1	**8-719-102-52**	**1SZ52**
D2	**8-719-102-52**	**1SZ52**
D3	**8-719-102-52**	**1SZ52**
D4	**8-719-102-52**	**1SZ52**
D5	**8-719-102-30**	**RD33EL2**
D7	**8-719-502-20**	**S2VB20**
D8	**8-719-815-55**	**1S1555**
D9	**8-719-102-26**	**RD30EL4**
D10	**8-719-300-76**	**RH1A**
D11	**8-719-982-04**	**ERB81-004**
D12	**8-719-815-55**	**1S1555**
D13	**8-719-982-04**	**ERB81-004**
D14	**8-719-815-55**	**1S1555**
D15	**8-719-200-02**	**10E-2**
D16	**8-719-200-02**	**10E-2**
IC1	**8-759-990-62**	**TL062CP: TI**
IC2	**8-759-990-62**	**TL062CP: TI**
IC3	**8-759-990-62**	**TL062CP: TI**
IC4	**8-759-990-62**	**TL062CP: TI**
L8	**1-459-433-00**	**22**
L10	**1-459-375-00**	**CHOKE 91**
L11	**1-459-375-00**	**CHOKE 91**
L12	**1-459-375-00**	**CHOKE 91**
L13	**1-459-375-00**	**CHOKE 91**
L15	**1-407-206-00**	**MICRO 10M**

Ref. No.	Parts No.	Description
Q1	**8-729-177-43**	**2SD774**
Q2	**8-729-177-43**	**2SD774**
Q3	**8-729-178-54**	**2SC2785**
Q4	**8-729-177-43**	**2SD774**
Q5	**8-729-177-43**	**2SD774**
Q6	**8-729-178-54**	**2SC2785**
Q7	**8-729-177-43**	**2SD774**
Q8	**8-729-177-43**	**2SD774**
Q9	**8-729-178-54**	**2SC2785**
Q10	**8-729-177-43**	**2SD774**
Q11	**8-729-177-43**	**2SD774**
Q12	**8-729-178-54**	**2SC2785**
Q13	**8-729-177-43**	**2SD774**
Q14	**8-729-177-43**	**2SD774**
Q15	**8-729-810-62**	**2SD1061R**
Q16	**8-729-177-43**	**2SD774**
Q17	**8-729-177-54**	**2SA1175**
Q18	**8-729-177-43**	**2SD774**
Q19	**8-729-178-54**	**2SC2785**
Q20	**8-729-178-54**	**2SC2785**
Q21	**8-729-178-54**	**2SC2785**
Q22	**8-729-178-54**	**2SC2785**
Q23	**8-729-177-43**	**2SD774**
⚠R3	**1-207-905-00**	**WIREWOUND 0.27 10% 3W**
⚠R11	**1-207-905-00**	**WIREWOUND 0.27 10% 3W**
⚠R19	**1-207-906-00**	**WIREWOUND 0.39 10% 3W**
⚠R26	**1-207-907-00**	**WIREWOUND 1.2 10% 3W**
⚠R32	**1-207-620-00**	**WIREWOUND 1 10% 3W**
⚠R50	**1-207-908-00**	**WIREWOUND 2.7 10% 3W**
R51	**1-244-858-11**	**CARBON 240 5% 1/2W**
R52	**1-208-260-00**	**CERAMIC 10**
R53	**1-244-858-11**	**CARBON 240 5% 1/2W**
R59	**1-207-914-00**	**WIRE 270 10% 3W**
R60	**1-215-411-00**	**METAL 390 1% 1/6W**
RV1	**1-224-929-00**	**METAL 5K**
RV2	**1-224-929-00**	**METAL 5K**
RV3	**1-224-927-00**	**METAL 1K**
RV4	**1-224-927-00**	**METAL 1K**
RY1	**1-515-542-11**	**1100Ω 24V**
RY2	**1-515-542-11**	**1100Ω 24V**
RY3	**1-515-542-11**	**1100Ω 24V**

Ref. No.	Parts No.	Description
S1	**1-554-076-00**	**SLIDE**
S2	**1-554-076-00**	**SLIDE**

PS-70 BOARD

	A-7513-182-A	MOUNTED CIRCUIT BOARD "PS-70"
CN1	1-561-773-00	RECEPTACLE, 42P
CN2	1-561-773-00	RECEPTACLE, 42P
CN3	1-564-152-00	RECEPTACLE, 10P
	1-561-177-00	**PLUG HOUSING 10P**
	1-560-768-00	PLUG CONTACT
	1-508-944-00	**PIN**
CN4	1-564-974-11	RECEPTACLE, 16P
	1-562-874-11	PLUG HOUSING 16P
	1-560-767-00	PLUG CONTACT
	1-560-768-00	PLUG CONTACT
	1-508-944-00	**PIN**
D1	**8-719-800-25**	**TLR109A**
D2	**8-719-800-25**	**TLR109A**
D3	**8-719-800-25**	**TLR109A**
D4	**8-719-800-25**	**TLR109A**
D5	**8-719-800-25**	**TLR109A**
D6	**8-719-815-55**	**1S1555**
D7	**8-719-100-27**	**RD4.7EB2**
D8	**8-719-815-55**	**1S1555**
D9	**8-719-815-55**	**1S1555**
D10	**8-719-182-07**	**RD8.2EB**
D11	**8-719-815-55**	**1S1555**
D12	**8-719-815-55**	**1S1555**
D13	**8-719-800-25**	**TLR109A**
D14	**8-719-182-07**	**RD8.2EB**
D15	**8-719-120-20**	**PS2002B**
IC1	**8-759-900-64**	**TL064CN: TI**
Q1	**8-729-178-54**	**2SC2785**
Q2	**8-729-178-54**	**2SC2785**
Q3	**8-729-178-54**	**2SC2785**
Q4	**8-729-178-54**	**2SC2785**
Q5	**8-729-178-54**	**2SC2785**

Ref. No.	Parts No.	Description
Q6	8-729-178-54	2SC2785
Q7	8-729-178-54	2SC2785
Q8	8-729-178-54	2SC2785
Q9	8-729-178-54	2SC2785
Q10	8-729-178-54	2SC2785
Q11	8-729-364-12	2SC641K
Q12	8-729-178-54	2SC2785
Q13	8-729-178-54	2SC2785
Q14	8-729-178-54	2SC2785

RE-18(A) BOARD

Ref. No.	Parts No.	Description
	A-7520-207-A	MOUNTED CIRCUIT BOARD "RE-18(A)"
D1	8-719-504-10	S4VB10
D2	8-719-504-10	S4VB10
D3	8-719-504-10	S4VB10
D4	8-719-504-10	S4VB10
D5	8-719-504-10	S4VB10

RE-18(B) BOARD

Ref. No.	Parts No.	Description
	A-7520-206-A	MOUNTED CIRCUIT BOARD "RE-18(B)"
Q1.	8-729-810-62	2SD1061R
Q2	8-729-810-62	2SD1061R
Q3	8-729-810-62	2SD1061R
Q4	8-729-810-62	2SD1061R
Q5	8-729-810-62	2SD1061R

SG-9/9A BOARD

Ref. No.	Parts No.	Description
	A-7513-184-A	MOUNTED CIRCUIT BOARD "SG-9" (NTSC)
	A-7513-185-A	MOUNTED CIRCUIT BOARD "SG-9A" (PAL)
C42	1-101-880-00	CERAMIC 47PF 5% 50V
C49	1-101-880-00	CERAMIC 47PF 5% 50V
		Ser. No. 10001~10205 (J) 20001~20505 (UC) 30001~30410 (AE)
C103	1-102-106-00	CERAMIC 100PF 10% 50V
C114	1-124-141-00	ELECT 330 20% 10V (PAL)
C115	1-102-110-00	CERAMIC 330 20% 10V
C117	1-102-106-00	CERAMIC 100PF 10% 50V
C127	1-102-106-00	CERAMIC 100PF 10% 50V
C128	1-102-106-00	CERAMIC 100PF 10% 50V
C161	1-124-142-11	ELECT 470 10V
C165	1-124-273-11	ELECT (NONPOLAR) 3.3 50V
C172	1-161-900-11	CERAMIC 1 50V
C167	1-102-106-00	CERAMIC 100PF 10% 50V
C171	1-161-888-00	CERAMIC 0.01 50V
CN1	1-562-730-11	RECEPTACLE, 90P
D3	8-719-100-22	RD4.3EB1
D4	8-719-815-55	1S1555
D5	8-719-815-55	1S1555
D6	8-719-815-55	1S1555
D7	8-719-815-55	1S1555
D8	8-719-815-55	1S1555
D9	8-719-815-55	1S1555
D10	8-719-815-55	1S1555
D11	8-719-815-55	1S1555
D12	8-719-815-55	1S1555
D13	8-719-815-55	1S1555
D14	8-719-815-55	1S1555
D15	8-719-815-55	1S1555
D16	8-719-815-55	1S1555
D17	8-719-815-55	1S1555
D18	8-719-815-55	1S1555
D19	8-719-815-55	1S1555
D20	8-719-815-55	1S1555

Ref. No.	Parts No.	Description
D21	8-719-815-55	1S1555
D22	8-719-815-55	1S1555
D23	8-719-815-55	1S1555
D24	8-719-156-07	RD5.6EB
D25	8-719-815-55	1S1555 (NTSC)
D26	8-719-815-55	1S1555 (NTSC)
D27	8-719-815-55	1S1555 (NTSC)
D28	8-719-815-55	1S1555
D29	8-719-815-55	1S1555 Ser. No.10301 and higher (J) 20401 and higher (UC) 30301 and higher (AE)
D30	8-719-101-98	1SS97 Ser. No.10301 and higher (J) 20401 and higher (UC) 30301 and higher (AE)
FL1	1-235-161-00	BAND PASS 3.58MHz (NTSC)
FL1	1-235-181-00	BAND PASS 4.43MHz (PAL)
FL2	1-235-573-11	LOW PASS 3.58MHz (NTSC)
FL2	1-235-572-11	LOW PASS 4.43MHz (PAL)
IC1	8-751-300-00	CX130: SONY
IC2	8-759-952-07	SN75207BM: TI
IC3	8-759-990-62	TL062CP: TI
IC4	8-759-240-51	TC4051BP: TOSHIBA
IC5	8-759-202-11	TC74HC00P: TOSHIBA
IC6	8-759-202-11	TC74HC00P: TOSHIBA
IC7	8-759-902-21	SN74LS221N: TI
IC8	8-759-902-21	SN74LS221N: TI
IC9	8-751-300-00	CX130: SONY
IC10	8-759-240-53	TC4053BP: TOSHIBA
IC11	8-759-990-62	TL062CP: TI
IC12	8-757-903-00	CX7903: SONY
IC13	8-759-990-82	TL082CP: TI
IC14	8-759-902-21	SN74LS221N: TI
IC15	8-759-202-74	TC74HC04P: TOSHIBA
IC16	8-759-202-11	TC74HC00P: TOSHIBA
IC17	8-759-202-74	TC74HC04P: TOSHIBA
IC18	8-759-902-21	SN74LS221N: TI
IC19	8-759-202-11	TC74HC00P: TOSHIBA
IC20	8-759-902-21	SN74LS221N: TI
IC21	8-759-902-21	SN74LS221N: TI
IC22	8-759-902-21	SN74LS221N: TI
IC23	8-759-202-11	TC74HC00P: TOSHIBA
IC24	8-759-001-33	MC74HC158N: MOTOROLA
IC25	8-757-731-00	CX773A: SONY
IC26	8-759-902-21	SN74LS221N: TI
IC27	8-759-907-21	CX7969: SONY
IC28	8-759-202-74	TC74HC04P: TOSHIBA
IC29	8-759-202-11	TC74HC00P: TOSHIBA
IC30	8-759-240-15	TC4015BP: TOSHIBA

Ref. No.	Parts No.	Description
IC31	8-759-240-53	TC4053BP: TOSHIBA
IC32	8-759-240-53	TC4053BP: TOSHIBA Ser. No. 10001~10010 (J) 20001~20120 (UC) 30001~30115 (AE)
IC33	8-759-990-62	TL062CP: TI
IC34	8-757-903-00	CX7903: SONY
IC35	8-759-901-75	SN74LS175N: TI
IC36	8-759-901-53	SN74LS153N: TI
IC37	8-759-990-62	TL062CP: TI
IC38	8-759-901-23	SN74LS123N: TI
IC39	8-759-708-05	NJM78L05A: JRC
Q1	8-729-178-73	2SC2787
Q2	8-729-178-73	2SC2787
Q3	8-729-178-73	2SC2787
Q4	8-729-178-73	2SC2787
Q5	8-729-178-73	2SC2787
Q6	8-729-110-53	2SA1005
Q7	8-729-364-12	2SC641K
Q8	8-729-364-12	2SC641K
Q9	8-729-178-73	2SC2787
Q10	8-729-266-83	2SC2668
Q11	8-729-178-73	2SC2787
Q12	8-729-178-73	2SC2787
Q13	8-729-178-54	2SC2785
Q14	8-729-178-54	2SC2785
Q15	8-729-178-54	2SC2785
Q16	8-729-178-73	2SC2787
Q17	8-729-178-73	2SC2787
Q18	8-729-110-53	2SA1005
Q19	8-729-178-73	2SC2787 (PAL)
Q20	8-729-178-73	2SC2787 (PAL)
Q21	8-729-110-53	2SA1005 (PAL)
Q22	8-729-178-54	2SC2785
Q23	8-729-178-73	2SC2787
Q24	8-729-178-73	2SC2787
Q25	8-729-178-73	2SC2787
Q26	8-729-178-54	2SC2785
Q27	8-729-117-54	2SA1175
Q28	8-729-266-83	2SC2668 Ser. No.10001 ~ 10205 (J) 20001 ~ 20306 (UC) 30001 ~ 30205 (AE)
Q28	8-729-364-12	2SC641K Ser. No.10301 and higher (J) 20401 and higher (UC) 30301 and higher (AE)
Q29	8-729-178-54	2SC2785
Q30	8-729-117-54	2SA1175
Q31	8-729-110-53	2SA1005
Q32	8-729-178-54	2SC2785
Q33	8-729-178-54	2SC2785
Q34	8-729-117-54	2SA1175
Q35	8-729-178-54	2SC2785

Ref. No.	Parts No.	Description
Q36	8-729-178-54	2SC2785
Q37	8-729-117-54	2SA1175
Q38	8-729-178-54	2SC2785
Q39	8-729-178-54	2SC2785
Q40	8-729-178-54	2SC2785
Q41	8-729-178-54	2SC2785
Q42	8-729-178-54	2SC2785 Ser. No. 10001~10010 (J) 20001~20120 (UC) 30001~30115 (AE)
Q43	8-729-178-54	2SC2785
Q44	8-729-178-73	2SC2787
Q45	8-729-178-73	2SC2787
Q46	8-729-110-53	2SA1005
R133	1-215-433-11	METAL 3300Ω 1/6W
RV1	1-224-938-00	METAL 2K Ser No. 10001~10205 (J) 20001~20306 (UC) 30001~30205 (AE)
RV1	1-224-939-00	METAL 5K Ser. No. 10301 and higher (J) 20401 and higher (UC) 30301 and higher (AE)
RV2	1-224-927-00	METAL 1K
RV3	1-224-940-00	METAL 10K
RV4	1-224-940-00	METAL 10K
RV5	1-224-938-00	METAL 2K Ser. No. 10001~10205 (J) 20001~20505 (UC) 30001~30410 (AE)
RV6	1-224-941-00	METAL 20K
RV7	1-224-941-00	METAL 20K
RV8	1-224-940-00	METAL 10K
RV9	1-224-942-00	METAL 50K
RV10	1-224-940-00	METAL 10K (NTSC) Ser. No. 10301 and higher (J) 20601 and higher (UC)
RV11	1-228-459-11	METAL 10K Ser. No.10301 and higher (J) 20601 and higher (UC) 30501 and higher (AE)
S1	1-554-399-00	TOGGLE
S2	1-554-399-00	TOGGLE
S3	1-553-252-00	ROTARY (NTSC)
S4	1-554-923-11	TOGGLE (NTSC)
THP1	1-806-166-11	4300Ω 2200PPM
X1	1-567-085-00	14.31818MHz (NTSC)
X1	1-567-086-00	14.1875MHz (PAL)
X2	1-567-084-00	14.31818MHz (NTSC)
X2	1-567-112-00	17.734475MHz (PAL)

VA-28 BOARD

Ref. No.	Parts No.	Description
	A-7513-188-A	MOUNTED CIRCUIT BOARD "VA-28"
CN1	1-562-730-11	RECEPTACLE, 90P
CV1	1-141-291-11	20PF
CV2	1-141-291-11	20PF
CV3	1-141-291-11	20PF
CV4	1-141-299-11	6PF Ser. No. 10301 and higher (J) 20601 and higher (UC) 30501 and higher (AE)
CV5	1-141-299-11	6PF Ser. No. 10301 and higher (J) 20601 and higher (UC) 30501 and higher (AE)
CV6	1-141-300-11	3PF Ser. No.10301 and higher (J) 20601 and higher (UC) 30501 and higher (AE)
CV7	1-141-291-11	20PF Ser. No.10301 and higher (J) 20601 and higher (UC) 30501 and higher (AE)
D1	8-719-815-55	1S1555
D2	8-719-815-55	1S1555
D3	8-719-815-55	1S1555
D4	8-719-815-55	1S1555
D5	8-719-815-55	1S1555
D6	8-719-815-55	1S1555
D7	8-719-815-55	1S1555
D8	8-719-815-55	1S1555
D9	8-719-815-55	1S1555
D10	8-719-815-55	1S1555
D11	8-719-815-55	1S1555
D12	8-719-815-55	1S1555
D13	8-719-815-55	1S1555
D14	8-719-815-55	1S1555
D15	8-719-815-55	1S1555
D16	8-719-815-55	1S1555
D17	8-719-815-55	1S1555
D18	8-719-815-55	1S1555
D19	8-719-815-55	1S1555
D20	8-719-815-55	1S1555
D21	8-719-815-55	1S1555
D22	8-719-815-55	1S1555
D23	8-719-815-55	1S1555
D24	8-719-815-55	1S1555
D25	8-719-815-55	1S1555
D26	8-719-815-55	1S1555
D27	8-719-815-55	1S1555
D28	8-719-815-55	1S1555
D29	8-719-815-55	1S1555
D30	8-719-815-55	1S1555

VA-28

Ref. No.	Parts No.	Description
D31	8-719-815-55	1S1555
D32	8-719-815-55	1S1555
D33	8-719-815-55	1S1555
D34	8-719-815-55	1S1555
D35	8-719-815-55	1S1555
D36	8-719-815-55	1S1555
D37	8-719-815-55	1S1555
D38	8-719-815-55	1S1555
D39	8-719-815-55	1S1555
D40	8-719-815-55	1S1555
D41	8-719-815-55	1S1555
D42	8-719-815-55	1S1555
D43	8-719-100-18	RD3.6EB1
D44	8-719-815-55	1S1555
D45	8-719-815-55	1S1555
D46	8-719-815-55	1S1555
D47	8-719-815-55	1S1555
D48	8-719-100-18	RD3.6EB1
D49	8-719-815-55	1S1555
D50	8-719-815-55	1S1555
D51	8-719-815-55	1S1555
D52	8-719-815-55	1S1555
D53	8-719-815-55	1S1555
D54	8-719-815-55	1S1555
IC1	8-759-240-53	TC4053BP: TOSHIBA
IC2	8-759-240-53	TC4053BP: TOSHIBA
IC3	8-741-130-50	BX1305: SONY
IC4	8-741-130-40	BX1304: SONY
IC5	8-741-130-50	BX1305: SONY
IC6	8-741-130-40	BX1304: SONY
IC7	8-741-130-50	BX1305: SONY
IC8	8-741-130-40	BX1304: SONY
IC9	8-759-240-49	TC4049BP: TOSHIBA
IC10	8-741-131-90	BX1319: SONY
IC11	8-741-131-90	BX1319: SONY
IC12	8-741-131-90	BX1319: SONY
IC13	8-759-240-81	TC4081BP: TOSHIBA
IC14	8-759-240-53	TC4053BP: TOSHIBA
IC15	8-759-240-53	TC4053BP: TOSHIBA
IC16	8-759-990-62	TL062CP: TI
IC17	8-759-240-49	TC4049BP: TOSHIBA
IC18	8-759-240-53	TC4053BP: TOSHIBA
IC19	8-741-130-50	BX1305: SONY
IC20	8-741-131-90	BX1319: SONY
IC21	8-741-130-50	BX1305: SONY
IC22	8-759-240-49	TC4049BP: TOSHIBA
IC23	8-759-240-53	TC4053BP: TOSHIBA
IC24	8-759-240-53	TC4053BP: TOSHIBA
IC25	8-741-130-50	BX1305: SONY

Ref. No.	Parts No.	Description
IC26	8-741-131-90	BX1319: SONY
IC27	8-759-990-62	TL062CP: TI
IC28	8-759-240-28	TC4028BP: TOSHIBA
IC29	8-759-240-49	TC4049BP: TOSHIBA
IC30	8-759-140-17	μPD4017BC: NEC
IC31	8-759-240-11	TC4011BP: TOSHIBA
IC32	8-759-240-11	TC4011BP: TOSHIBA
IC33	8-759-240-11	TC4011BP: TOSHIBA
IC34	8-759-240-53	TC4053BP: TOSHIBA
IC35	8-759-990-62	TL062CP: TI
IC36	8-759-240-53	TC4053BP: TOSHIBA
IC37	8-759-240-53	TC4053BP: TOSHIBA
IC38	8-759-990-62	TL062CP: TI
IC39	8-759-902-21	SN74LS221N: TI
IC40	8-759-014-96	MC1496P: MOTOROLA
LV1	1-408-845-00	100
LV2	1-408-845-00	100
Q1	8-729-117-54	2SA1175
Q2	8-729-117-54	2SA1175
Q3	8-729-117-54	2SA1175
Q4	8-729-178-73	2SC2787
Q5	8-729-178-73	2SC2787
Q6	8-729-178-73	2SC2787
Q7	8-729-117-54	2SA1175
Q8	8-729-178-54	2SC2785
Q9	8-729-178-54	2SC2785
Q10	8-729-117-54	2SA1175
Q11	8-729-178-54	2SC2785
Q12	8-729-178-54	2SC2785
Q13	8-729-117-54	2SA1175
Q14	8-729-117-54	2SA1175
Q15	8-729-117-54	2SA1175
Q16	8-729-178-54	2SC2785
Q17	8-729-117-54	2SA1175
Q18	8-729-178-54	2SC2785
Q19	8-729-178-54	2SC2785
Q20	8-729-117-54	2SA1175
Q21	8-729-178-54	2SC2785
Q22	8-729-178-54	2SC2785
Q23	8-729-117-54	2SA1175
Q24	8-729-117-54	2SA1175
Q25	8-729-117-54	2SA1175
Q26	8-729-178-54	2SC2785
Q27	8-729-117-54	2SA1175
Q28	8-729-178-54	2SC2785
Q29	8-729-178-54	2SC2785
Q30	8-729-117-54	2SA1175

Ref. No.	Parts No.	Description
Q31	8-729-178-54	2SC2785
Q32	8-729-178-54	2SC2785
Q33	8-729-117-54	2SA1175
Q34	8-729-117-54	2SA1175
Q35	8-729-117-54	2SA1175
Q36	8-729-178-54	2SC2785
Q37	8-729-178-54	2SC2785
Q38	8-729-178-54	2SC2785
Q39	8-729-178-54	2SC2785
Q40	8-729-178-54	2SC2785
Q41	8-729-178-54	2SC2785
Q42	8-729-117-54	2SA1175
Q43	8-729-178-54	2SC2785
Q44	8-729-117-54	2SA1175
Q45	8-729-178-54	2SC2785
Q46	8-729-117-54	2SA1175
Q47	8-729-178-54	2SC2785
Q48	8-729-117-54	2SA1175
Q49	8-729-364-12	2SK641K
Q50	8-729-117-54	2SA1175
Q51	8-729-117-54	2SA1175
Q52	8-729-117-54	2SA1175
Q53	8-729-117-54	2SA1175
Q54	8-729-802-43	2SK125-3
Q55	8-729-802-43	2SK125-3
Q56	8-729-802-43	2SK125-3
Q57	8-729-802-43	2SK125-3
Q58	8-729-802-43	2SK125-3
Q59	8-729-266-83	2SC2668
Q60	8-729-266-83	2SC2668
Q61	8-729-178-54	2SC2785
Q62	8-729-802-43	2SK125-3
Q63	8-729-178-54	2SC2785
Q64	8-729-117-54	2SA1175
Q65	8-729-178-54	2SC2785
Q66	8-729-802-43	2SK125-3
Q67	8-729-117-54	2SA1175
Q68	8-729-117-54	2SA1175
Q69	8-729-117-54	2SA1175
Q70	8-729-117-54	2SA1175
Q71	8-729-117-54	2SA1175
Q72	8-729-117-54	2SA1175
Q73	8-729-117-54	2SA1175
Q74	8-729-117-54	2SA1175
Q75	8-729-178-54	2SC2785
Q76	8-729-178-54	2SC2785
Q77	8-729-117-54	2SA1175
Q78	8-729-802-43	2SK125-3
Q79	8-729-802-43	2SK125-3
Q80	8-729-802-43	2SK125-3
Q81	8-729-178-54	2SC2785
Q82	8-729-178-54	2SC2785
Q83	8-729-178-54	2SC2785
Q84	8-729-110-53	2SA1005
Q85	8-729-110-53	2SA1005
Q86	8-729-110-53	2SA1005
Q87	8-729-110-53	2SA1005
Q88	8-729-110-53	2SA1005
Q89	8-729-110-53	2SA1005
Q90	8-729-110-53	2SA1005
Q91	8-729-110-53	2SA1005
Q92	8-729-110-53	2SA1005
Q93	8-729-110-53	2SA1005
Q94	8-729-802-43	2SK125-3
Q95	8-729-178-54	2SC2785
Q96	8-729-178-54	2SC2785
Q97	8-729-117-54	2SA1175
Q98	8-729-178-54	2SC2785
Q99	8-729-117-54	2SA1175
Q100	8-729-117-54	2SA1175
Q101	8-729-178-54	2SC2785
Q102	8-729-178-54	2SC2785
Q103	8-729-117-54	2SA1175
Q104	8-729-178-54	2SC2785
Q105	8-729-110-53	2SA1005
Q106	8-729-178-73	2SC2787
Q107	8-729-178-73	2SC2787
Q108	8-729-266-83	2SC2668
Q109	8-729-266-83	2SC2668
Q110	8-729-266-83	2SC2668
Q111	8-729-117-54	2SA1175
Q112	8-729-117-54	2SA1175
Q113	8-729-178-54	2SC2785
Q114	8-729-178-54	2SC2785
Q115	8-729-178-54	2SC2785
Q119	8-729-117-54	2SA1175
Q120	8-729-117-54	2SA1175
Q121	8-729-178-54	2SC2785
Q122	8-729-802-43	2SK125-3
Q123	8-729-266-83	2SC2668

Ref. No.	Parts No.	Description
Q124	8-729-110-53	2SA1005
Q125	8-729-266-83	2SC2668
Q126	8-729-266-83	2SC2668
Q127	8-729-266-83	2SC2668
Q128	8-729-117-54	2SA1175
Q129	8-729-117-54	2SA1175
Q130	8-729-178-54	2SC2785
Q131	8-729-178-54	2SC2785
Q132	8-729-110-53	2SA1005
Q133	8-729-110-53	2SA1005
Q134	8-729-178-54	2SC2785
Q135	8-729-117-54	2SA1175
Q136	8-729-178-54	2SC2785
Q137	8-729-178-54	2SC2785
Q138	8-729-178-54	2SC2785
Q139	8-729-178-54	2SC2785
Q140	8-729-802-43	2SK125-3
Q141	8-729-178-54	2SC2785
Q142	8-729-110-53	2SA1005
RV1	1-224-927-00	METAL 1K
RV2	1-224-928-00	METAL 2K
RV3	1-228-456-00	METAL 1K
RV4	1-228-459-00	METAL 10K
RV5	1-224-927-00	METAL 1K
RV6	1-224-928-00	METAL 2K
RV7	1-228-456-00	METAL 1K
RV8	1-228-459-00	METAL 10K
RV9	1-224-927-00	METAL 1K
RV10	1-224-928-00	METAL 2K
RV11	1-228-456-00	METAL 1K
RV12	1-228-459-00	METAL 10K
RV13	1-228-458-00	METAL 5K
RV14	1-228-458-00	METAL 5K
RV15	1-228-458-00	METAL 5K
RV16	1-228-455-00	METAL 500
RV17	1-228-455-00	METAL 500
RV18	1-228-455-00	METAL 500
RV19	1-228-456-00	METAL 1K
RV20	1-228-458-00	METAL 5K Ser. No. 10001~10205 (J) 20001~20505 (UC) 30001~30410 (AE)
RV21	1-228-456-00	METAL 1K
RV22	1-228-456-00	METAL 1K
RV23	1-228-460-00	METAL 20K
RV24	1-228-460-00	METAL 20K
RV25	1-228-457-00	METAL 2K

Ref. No.	Parts No.	Description
RV26	1-228-458-00	METAL 5K Ser. No. 10001~10205 (J) 20001~20505 (UC) 30001~30410 (AE)
RV27	1-228-456-00	METAL 1K
RV28	1-224-931-00	METAL 20K
RV29	1-224-930-00	METAL 10K
RV30	1-228-456-00	METAL 1K
RV31	1-228-459-00	METAL 10K
RV32	1-228-456-00	METAL 1K
RV33	1-224-930-00	METAL 10K
RV34	1-228-458-00	METAL 5K
RV35	1-228-458-00	METAL 5K

FRAME

Ref. No.	Parts No.	Description
	1-935-922-11	TRIAX HARNESS
	1-561-172-00	RECEPTACLE, 50P
	1-935-923-11	RCP HARNESS
CN110	1-564-968-11	RECEPTACLE, 16P "RCP"
	1-935-924-11	MSU HARNESS
CN111	1-564-968-11	RECEPTACLE, 16P "MSU/CCP"
CN112	1-564-968-11	RECEPTACLE, 16P "MSU/CCP"
	1-935-926-11	INCOM PANEL HARNESS
CN106	1-509-176-31	RECEPTACLE, 3P "RTS IN"
CN107	1-509-184-31	RECEPTACLE, 3P "RTS OUT"
CN108	1-564-971-11	RECEPTACLE, 19P "INCOM/TALLY/PGM"
C1	1-136-199-11	FILM 0.1 5% 400V
C2	1-136-199-11	FILM 0.1 5% 400V
C3	1-136-199-11	FILM 0.1 5% 400V
C4	1-136-199-11	FILM 0.1 5% 400V
C5	1-136-199-11	FILM 0.1 5% 400V
C6	1-136-199-11	FILM 0.1 5% 400V
C23	1-136-199-11	FILM 0.1 5% 400V
CN104	1-509-176-31	RECEPTACLE, 3P "MIC" (EXCEPT JAPAN)
	1-509-184-31	RECEPTACLE, 3P "MIC" (JAPAN)
CN105	1-509-176-31	RECEPTACLE, 3P "MIC" (EXCEPT JAPAN)
	1-509-184-31	RECEPTACLE, 3P "MIC" (JAPAN)
CN109	1-561-376-00	RECEPTACLE, 4P "WF MODE"
CN113	1-561-781-21	RECEPTACLE, BNC "RET 1 IN"
CN114	1-561-781-21	RECEPTACLE, BNC "RET 1 IN"

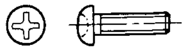
Ref. No.	Parts No.	Description
CN115	**1-561-781-21**	**RECEPTACLE, BNC "RET 2 IN"**
CN116	**1-561-781-21**	**RECEPTACLE, BNC "RET 2 IN"**
CN117	**1-561-781-21**	**RECEPTACLE, BNC "SYNC/VBS IN"**
CN118	**1-561-781-21**	**RECEPTACLE, BNC "SYNC/VBS IN"**
CN119	**1-561-781-21**	**RECEPTACLE, BNC "PAL PULSE IN"**
CN120	**1-561-781-21**	**RECEPTACLE, BNC "PAL PULSE IN"**
CN121	**1-561-781-21**	**RECEPTACLE, BNC "SC IN"**
CN122	**1-561-781-21**	**RECEPTACLE, BNC "SC IN"**
CN123	**1-561-781-21**	**RECEPTACLE, BNC "PROMPT"**
CN124	**1-561-781-21**	**RECEPTACLE, BNC "PROMPT"**
CN125	**1-561-781-21**	**RECEPTACLE, BNC "VBS 1 OUT"**
CN126	**1-561-781-21**	**RECEPTACLE, BNC "VBS 2 OUT"**
CN127	**1-561-781-21**	**RECEPTACLE, BNC "VBS 3 OUT"**
CN128	**1-561-781-21**	**RECEPTACLE, BNC "VBS 4/VB OUT"**
CN129	**1-561-781-21**	**RECEPTACLE, BNC "PIX OUT"**
CN130	**1-561-781-21**	**RECEPTACLE, BNC "WF OUT"**
CN131	**1-561-781-21**	**RECEPTACLE, BNC "R OUT"**
CN132	**1-561-781-21**	**RECEPTACLE, BNC "G OUT"**
CN133	**1-561-781-21**	**RECEPTACLE, BNC "B OUT"**
CN134	**1-561-781-21**	**RECEPTACLE, BNC "Y OUT"**
CN135	**1-561-781-21**	**RECEPTACLE, BNC "R-Y OUT"**
CN136	**1-561-781-21**	**RECEPTACLE, BNC "B-Y OUT"**
CN137	**1-561-781-21**	**RECEPTACLE, BNC "SYNC OUT"**
CN138	**1-561-781-21**	**RECEPTACLE, BNC "SC OUT"**
CN144	**1-561-781-21**	**RECEPTACLE, BNC SPARE**
CN145	**1-561-781-21**	**RECEPTACLE, BNC SPARE**
J101	**1-507-676-11**	**PHONE "PGM"**
J102	**1-507-676-11**	**PHONE "INCOM"**
M101	**1-541-209-00**	**DC**
R101	**1-214-112-00**	**METAL 150 1% 1/4W**
R102	**1-214-112-00**	**METAL 150 1% 1/4W**

POWER UNIT FRAME

Ref. No.	Parts No.	Description
⚠	A-7615-170-A	PS ASSY
	1-935-912-13	50P HARNESS
CN101	1-562-945-11	RECEPTACLE, 50P
⚠CN102	**1-526-813-11**	**AC INLET WITH NOISE FILTER**
⚠M101	**1-541-296-11**	**AC**
S101	**1-516-379-00**	**ROCKER "CAMERA"**
⚠S102	**1-552-060-00**	**ROCKER "MAIN POWER"**
⚠T101	**1-448-201-12**	**POWER "CAMERA"**
⚠T102	**1-448-202-12**	**POWER "CCU"**

SCREW

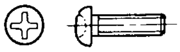
+B
Bzn-N



7-682-□□□-□□

SIZE	Parts No.
3 x 3	544-09
x 4	545-09
x 5	546-09
x 6	547-09
x 8	548-09
x 10	549-09
x 12	550-09
x 14	551-09
x 16	552-09
x 20	553-09
4 x 4	558-09
x 5	559-09
x 6	560-09
x 8	561-09
x 10	562-09
x 12	563-09
x 14	564-09
x 16	565-09
x 20	566-09

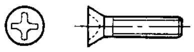
+B
Cr-N



7-682-□□□-□□

SIZE	Parts No.
3 x 3	544-04
x 4	545-04
x 5	546-04
x 6	547-04
x 8	548-04
x 10	549-04
x 12	550-04
x 14	551-04
x 16	552-04
x 20	553-04
4 x 4	558-04
x 5	559-04
x 6	560-04
x 8	561-04
x 10	562-04
x 12	563-04
x 14	564-04
x 16	565-04
x 20	566-04

+K
Bzn-N



7-682-□□□-□□

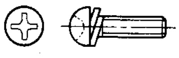
SIZE	Parts No.
3 x 4	245-09
x 5	246-09
x 6	247-09
x 8	248-09
x 10	249-09
x 12	250-09
x 14	251-09
x 16	252-09
x 20	253-09
4 x 6	260-09
x 8	261-09
x 10	262-09
x 12	263-09
x 14	264-09
x 16	265-09
x 20	266-09

+PSW
Czn-N

7-682-□□□-□□

SIZE	Parts No.
3 x 6	947-01
x 8	948-01
x 10	949-01
x 12	950-01
x 14	951-01
x 16	952-01
x 20	953-01
x 25	954-01
x 30	955-01
x 35	956-01
x 40	957-01
4 x 8	961-01
x 10	962-01
x 12	963-01
x 14	964-01
x 16	965-01
x 20	966-01
x 25	967-01
x 30	968-01
x 35	969-01
x 40	970-01

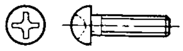
+PS
Czn-N



7-682-□□□-□□

SIZE	Parts No.
2 x 4	253-05
x 5	253-15
x 6	253-25
x 8	253-35
x 10	253-45
x 12	253-55
2.6 x 4	253-95
x 5	254-05
x 6	254-15
x 8	254-25
x 10	254-35
x 12	254-45
x 14	254-95
x 16	254-55
x 20	254-65
3 x 5	646-01
x 6	647-01
x 8	648-01
x 10	649-01
x 12	650-01
x 14	651-01
x 16	652-01
x 20	653-01
4 x 6	660-01
x 8	661-01
x 10	662-01
x 12	663-01
x 14	664-01
x 16	665-01
x 20	666-01

PRECISION +P
Cr-N

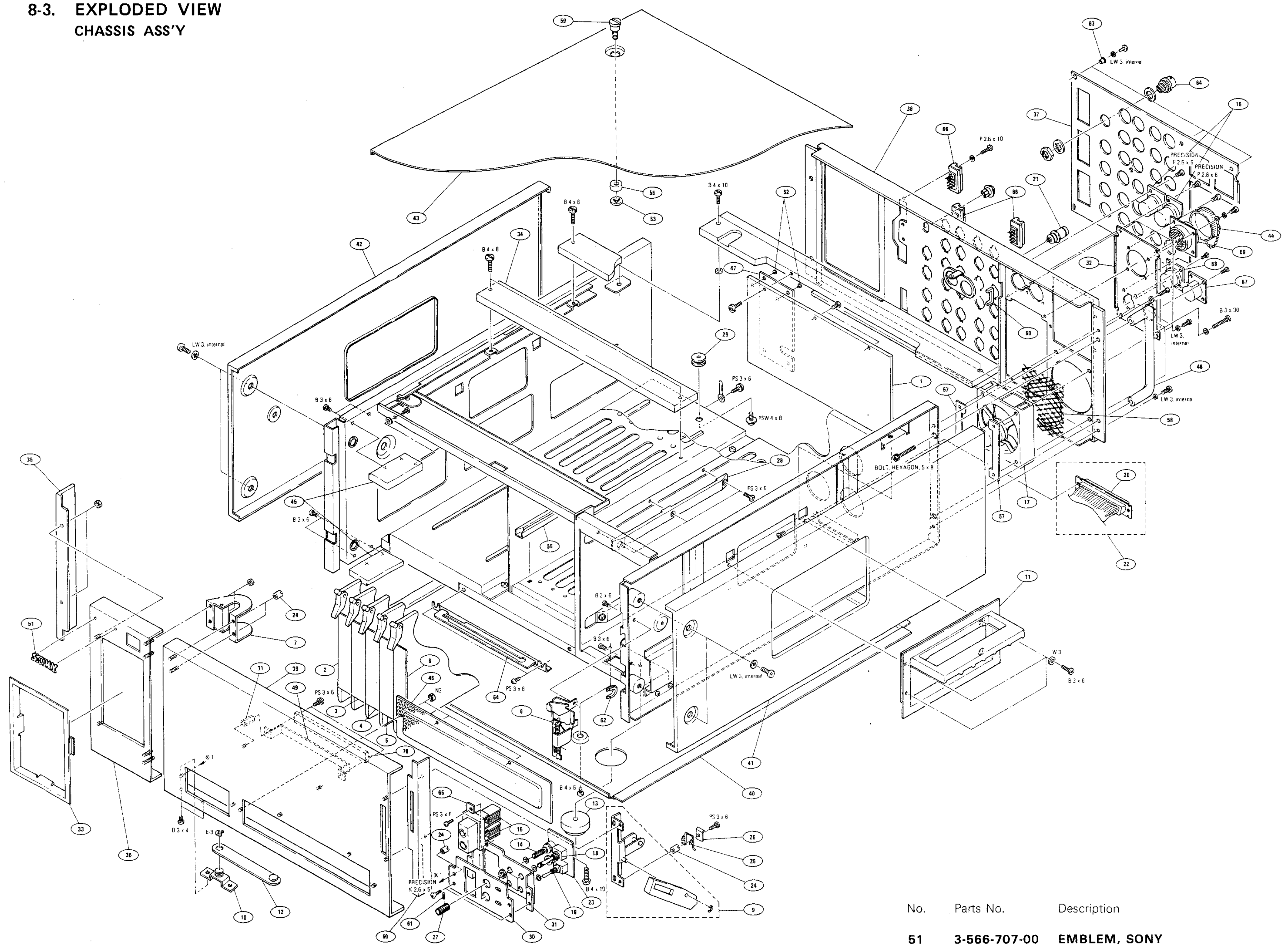


7-627-□□□-□□

SIZE	Parts No.
1.7 x 1.6	–
x 1.8	–
x 2	552-27
x 2.2	552-87
x 2.5	552-07
x 2.8	–
x 3	552-37
x 3.5	–
x 4	552-47
x 4.5	552-67
x 5	552-57
x 5.5	557-07
x 6	552-77
2 x 1.8	554-37
x 2	553-17
x 2.2	554-07
x 2.5	553-27
x 2.8	–
x 3	553-37
x 3.5	554-17
x 4	553-47
x 4.5	553-57
x 5	553-67
x 5.5	–
x 6	554-27
x 7	553-87
x 8	553-97
x 10	553-77
2.6 x 2.8	556-07
x 3	–
x 3.5	–
x 4	556-37
x 4.5	–
x 5	–
x 5.5	–
x 6	556-77
x 7	–
x 8	556-97
x 9	–
x 10	557-47

8-3. EXPLODED VIEW

CHASSIS ASS'Y



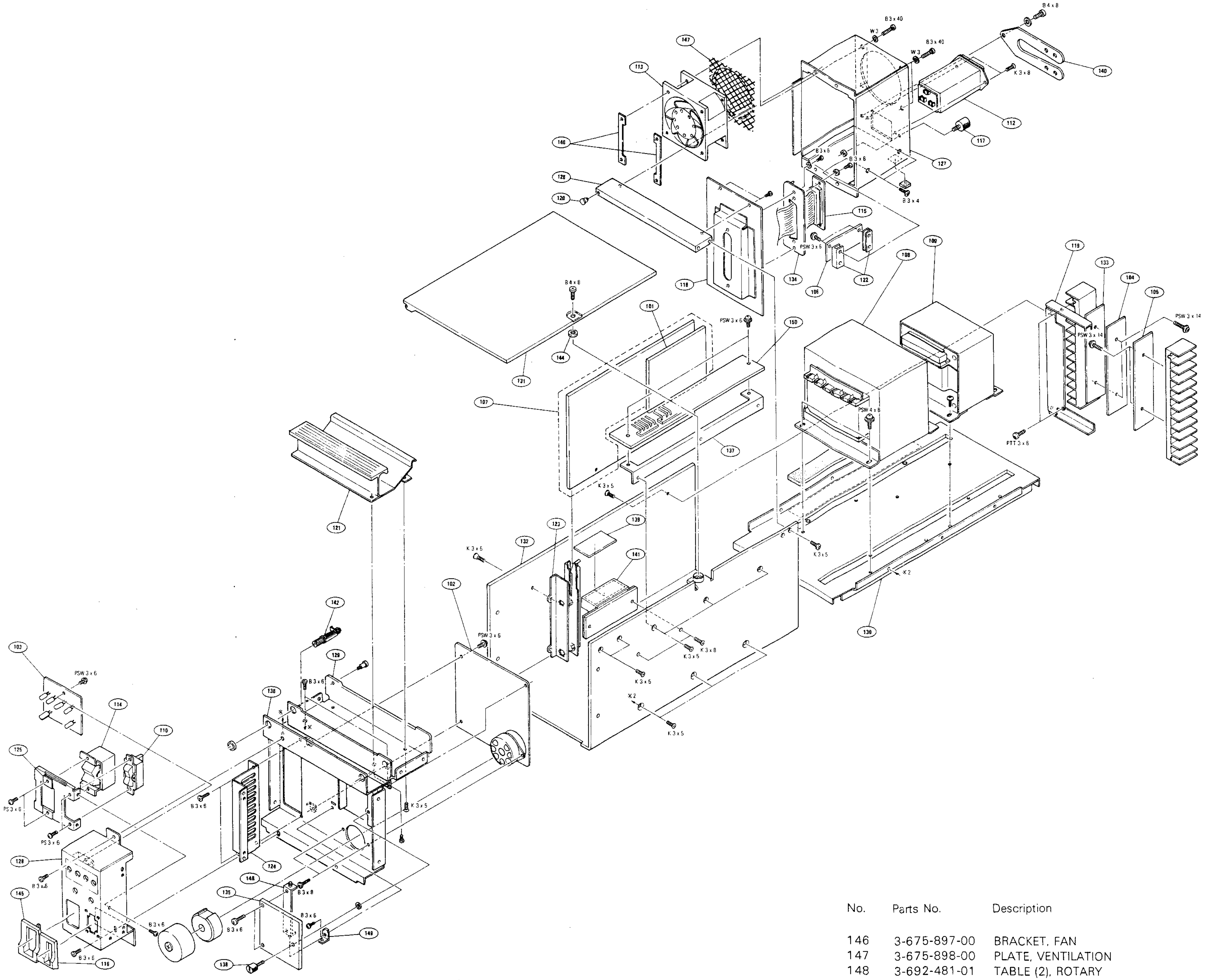
No.	Parts No.	Description
1	A-7513-180-A	MOUNTED CIRCUIT BOARD "MB-91"
2	A-7513-183-A	MOUNTED CIRCUIT BOARD "AT-26"
3	A-7513-184-A	MOUNTED CIRCUIT BOARD "SG-9" (FOR NTSC)
	A-7513-185-A	MOUNTED CIRCUIT BOARD "SG-9A" (FOR PAL)
4	A-7513-186-A	MOUNTED CIRCUIT BOARD "EN-31" (FOR NTSC)
	A-7513-187-A	MOUNTED CIRCUIT BOARD "EN-31A" (FOR PAL)
5	A-7513-188-A	MOUNTED CIRCUIT BOARD "VA-28"
6	A-7513-189-A	MOUNTED CIRCUIT BOARD "AU-58"
7	A-7555-030-A	HINGE ASSY
8	X-2249-306-6	BRACKET ASSY
9	X-2249-307-5	HANDLE ASSY, OPEN AND CLOSE
10	X-2284-802-0	SUPPORT ASSY
11	**X-3642-018-0**	**HANDLE ASSY**
12	**X-3658-804-1**	**STOPPER ASSY**
13	**X-4310-310-0**	**FOOT ASSY**
14	**1-226-809-11**	**RES, 5K (RV1, 2)**
15	**1-507-676-00**	**JACK, PHONE "PGM" "INCOM"**
16	**1-509-176-31**	**RECEPTACLE, 3P "MIC" (EXCEPT JAPAN)**
	1-509-184-31	**RECEPTACLE, 3P "MIC" (JAPAN)**
17	**1-541-209-00**	**FAN, DC**
18	**1-554-355-11**	**SWITCH, TOGGLE (S1)**
19	**1-554-356-11**	**SWITCH, TOGGLE (S2)**
20	**1-561-172-00**	**CONNECTOR (50P)**
21	**1-561-781-21**	**RECEPTACLE, BNC (CN113-145)**
22	1-935-922-11	TRIAX HARNESS
23	1-615-210-11	PRINTED CIRCUIT BOARD "CNB-3"
24	2-249-362-00	STUD
25	2-249-373-00	SPRING
26	2-252-657-00	GUIDE, SPRING
27	**2-270-649-00**	**KNOB, A**
28	2-355-305-01	GUIDE (T)
29	2-355-306-01	PIN, PW
30	2-355-308-02	COVER (A), INCOM
31	2-355-309-02	BRACKET (A), INCOM
32	2-355-318-01	PANEL (A), INCOM
33	2-355-319-01	GUARD, FRONT
34	2-355-325-01	STAY, UPPER
35	2-355-329-01	PLATE (L), SIDE FRONT
36	2-355-330-01	PANEL (SMALL), FRONT
37	2-355-331-01	PLATE, ORNAMENTAL, REAR PANEL
38	2-355-332-01	PANEL, REAR
39	2-355-335-02	PANEL, BLANK
40	2-355-341-01	PLATE, BOTTOM
41	2-355-342-01	PLATE, SIDE, RIGHT
42	2-355-343-01	PLATE, SIDE, LEFT
43	2-355-344-01	PLATE, TOP
44	2-355-349-01	CAP, CONNECTOR
45	2-355-368-02	REINFORCEMENT
46	2-355-369-01	VENTILATOR, BLANK PANEL
47	2-355-371-01	SHEET, INSULATING, MB-91
48	2-355-379-01	HANDLE
49	2-355-390-01	RETAINER, CCU PC BOARD
50	2-375-758-02	PLATE (R), FRONT

No.	Parts No.	Description
51	**3-566-707-00**	**EMBLEM, SONY**
52	**3-646-090-11**	**RIVET, NYLON**
53	3-650-537-00	WASHER
54	3-659-921-00	RETAINER, SLIDE
55	3-673-676-31	RAIL, PC BOARD GUIDE
56	3-675-895-00	SPACER, UPPER LID
57	3-675-897-00	BRACKET, FAN
58	3-675-898-00	PLATE, VENTILATION
59	**3-677-103-00**	**SCREW, COIN, M4 UPPER LID**
60	3-677-781-02	COVER, INSULATING

No.	Parts No.	Description
61	**3-701-505-00**	**SET SCREW, DOUBLE POINT 3x3**
62	4-302-401-00	BUSHING, DEGAUSSING COIL
63	**4-812-134-00**	**RIVET, NYLON, 3.5**
64	**1-561-376-00**	**RECEPTACLE 4P "WF MODE" (CN109)**
65	2-270-650-00	INSULATOR
66	1-564-968-11	RECEPTACLE, MULTI (SQUARE) 16P "RCP" "MSU/CP"

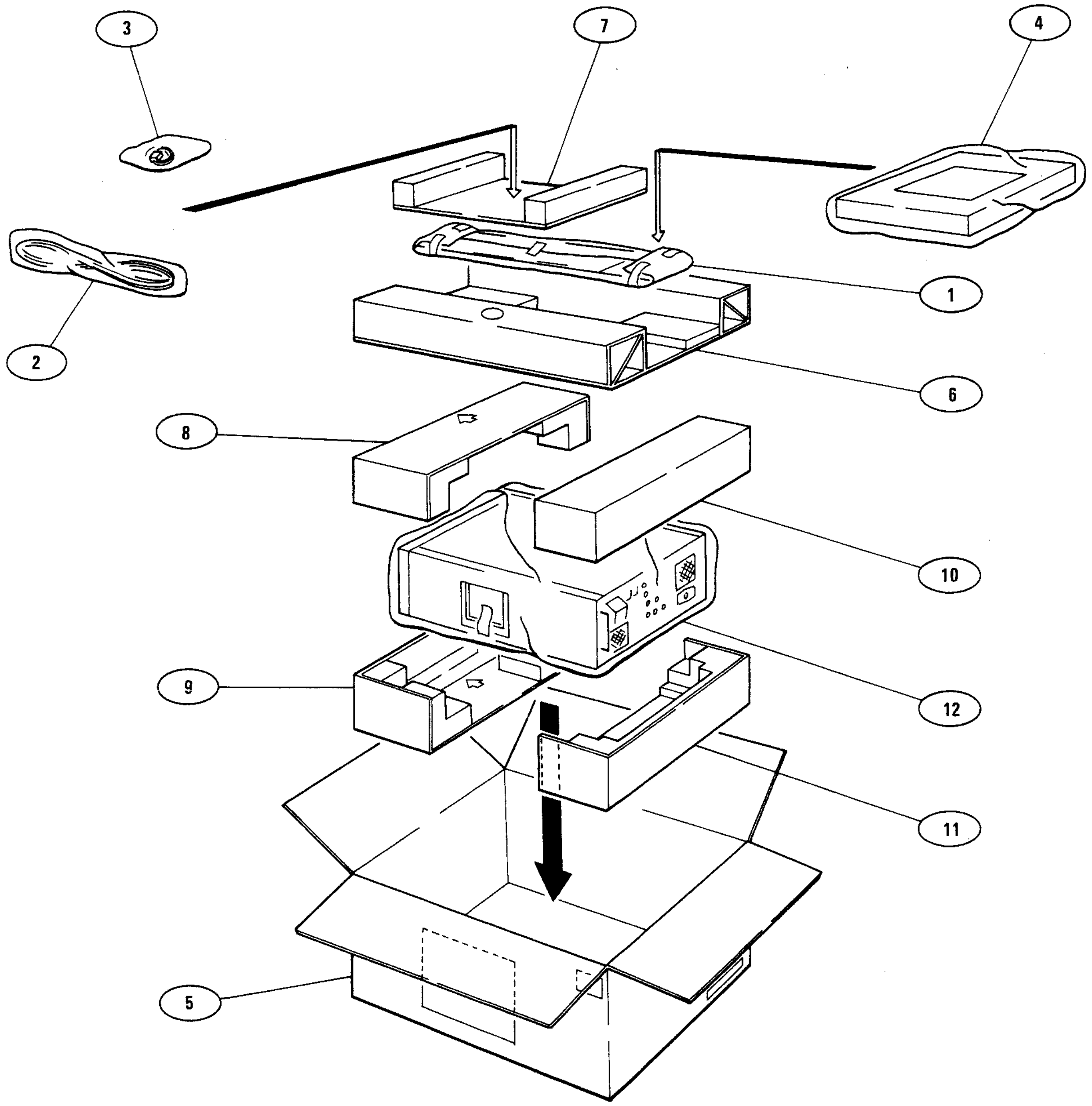
No.	Parts No.	Description
67	1-509-176-31	RECEPTACLE 3P
68	1-509-184-31	RECEPTACLE 3P
69	1-564-971-11	RECEPTACLE MULTI (19M) "INCOM/TALLY/PGM"
70	2-355-372-03	PAD PC BOARD RETAINER
71	3-136-007-07	SUPPORT

POWER UNIT ASSY



No.	Parts No.	Description
101	A-7513-182-A	MOUNTED CIRCUIT BOARD "PS-70"
102	A-7520-204-A	MOUNTED CIRCUIT BOARD "FU-25"
103	A-7520-205-A	MOUNTED CIRCUIT BOARD "LE-29"
104	A-7520-206-A	MOUNTED CIRCUIT BOARD "RE-18" (B)
105	A-7520-207-A	MOUNTED CIRCUIT BOARD "RE-18" (A)
106	1-615-213-11	PRINTED CIRCUIT BOARD "CN-13"
107	A-7615-170-A	PS ASSY
⚠ **108**	**1-448-201-11**	**TRANSFORMER, POWER "CAMERA"**
⚠ **109**	**1-448-202-11**	**TRANSFORMER, POWER "CCU"**
⚠ **110**	**1-516-379-00**	**SWITCH, ROCKER "CAMERA"**
⚠ **112**	**1-526-813-11**	**INLET, AC 3P**
⚠ **113**	**1-541-296-11**	**FAN, AC**
⚠ **114**	**1-552-060-00**	**SWITCH, ROCKER "MAIN POWER"**
115	1-935-912-11 1-562-945-11	HARNESS (50P) RECEPTACLE 50P
116	2-251-642-00	GUARD, POWER SWITCH
117	**2-270-617-00**	**SCREW, KNOB**
118	2-355-304-01	BRACKET, CONNECTOR, PW
119	2-355-310-01	BRACKET, HEAT SINK
120	2-355-311-01	SHAFT, FIXED
121	2-355-312-01	HANDLE, DRAWER
122	2-355-313-01	BRACKET (B), PC BOARD
123	2-355-314-01	BRACKET (A), PC BOARD
124	2-355-315-01	PLATE, SIDE, FRONT
125	2-355-316-01	BRACKET, SWITCH
126	2-355-320-01	REINFORCEMENT, POWER
127	2-355-321-02	BOX, FITTING, FAN
128	2-355-322-01	CASE, SWITCH, POWER
129	2-355-323-01	REINFORCEMENT, HANDLE
130	2-355-333-02	BRACKET,TRANSFORMER
131	2-355-334-01	PLATE, TOP
132	2-355-338-01	CABINET, POWER
133	2-355-350-01	SHEET, COOL
134	2-355-352-01	PLATE (MALE), GUIDE PIN
135	2-355-353-01	GUARD, FUSE
136	2-355-358-03	PANEL, POWER FRONT
137	2-355-370-01	STOPPER, PC BOARD, POWER
138	2-355-376-01	SCREW, COVER
139	2-355-380-01	SHEET, TRANSFORMER
140	2-355-381-01	CLAMP, CABLE
141	2-355-382-01	RETAINER, TRANSFORMER
142	2-375-768-01	STOPPER
144	3-650-537-00	WASHER
145	**3-651-850-03**	**GUARD, P SWITCH**
146	3-675-897-00	BRACKET, FAN
147	3-675-898-00	PLATE, VENTILATION
148	3-692-481-01	TABLE (2), ROTARY
149	3-692-482-01	TABLE (3), ROTARY
150	1-615-214-11	PRINTED CIRCUIT BOARD "CN-14"

8-4. PACKING MATERIAL & ACCESSORY (SUPPLIED)



No.	Parts No.	Description
1	**A-7513-190-A**	**BOARD EXTENDER "EX-63"**
⚠ **2**	**1-534-754-00**	**CORD, POWER (J)**
	1-534-819-00	**CORD, POWER (PAL)**
	1-551-812-00	**CORD, POWER (UC)**
3	**1-506-767-11**	**19P PLUG FEMALE**
	3-701-621-00	**BAG, POLY (FOR CONNECTOR)**
4	2-355-375-01	PLATE, NUMBER
	3-701-632-00	**BAG, POLY (FOR MANUAL, PLATE)**
5	2-355-383-00	CARTON, INDIVIDUAL
6	2-355-384-01	BOARD, TOP
7	2-355-385-01	SPACER
8	2-355-386-01	CUSHION FRONT TOP
9	2-355-387-01	CUSHION FRONT BOTTOM
10	2-355-388-01	CUSHION REAR TOP
11	2-355-389-01	CUSHION REAR BOTTOM
12	**3-701-648-00**	**BAG, POLY (FOR CCU-360/360P)**

SONY COMMUNICATION SYSTEMS
SERVICE-ARCHIV CENTRAL-SUPPORT
Köhlstr. 27

5000 KÖLN 30

SONY®

CAMERA CONTROL UNIT

CCU-360P

SUPPLEMENT-1

Please replace and file this supplement-1
to your own manual.

OPERATION AND MAINTENANCE MANUAL

CCU-360P(AE)
9-966-873-03

Sony Corporation

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1986.9 09

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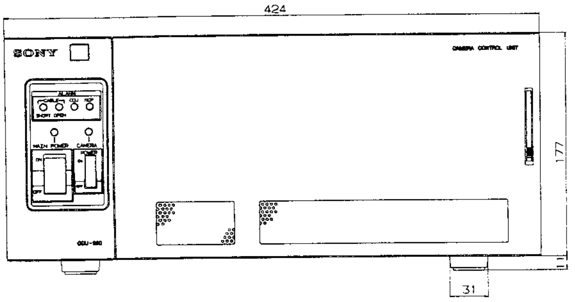
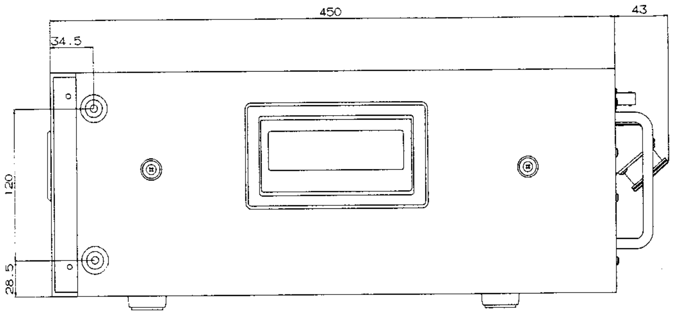
SECTION 2
INSTALLATION

2-1. OUTSIDE DIMENSIONS

Unit : mm

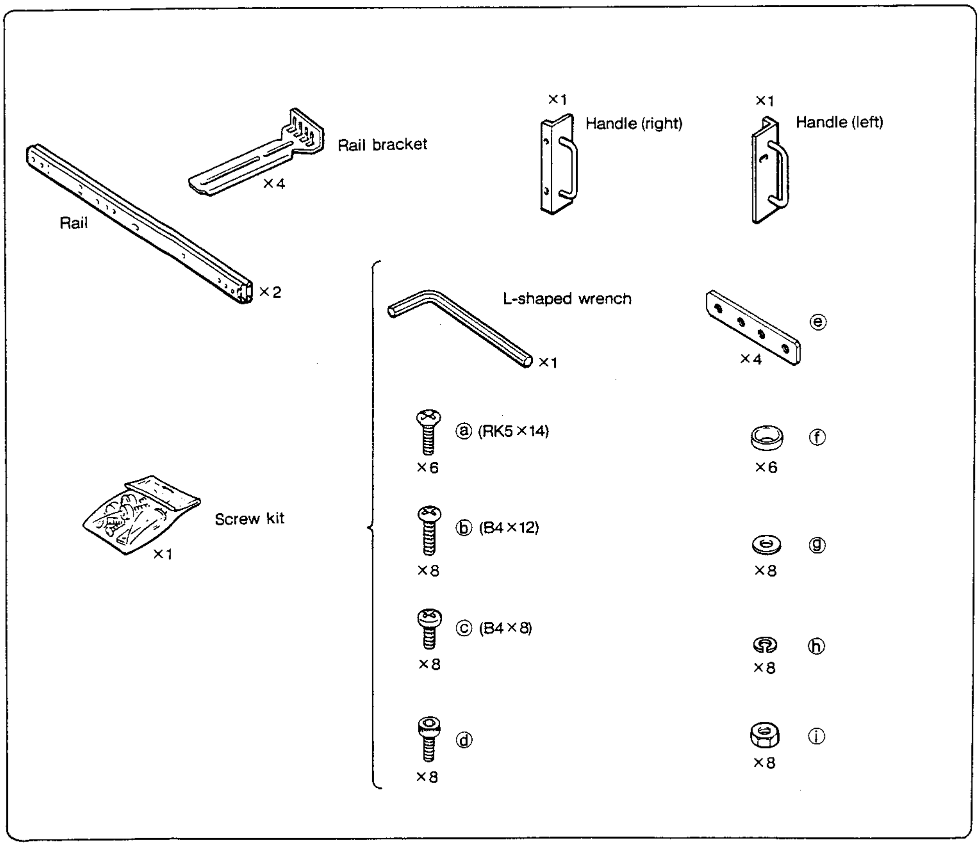

424
SONY
177
31


450
43
34.5
120
28.5

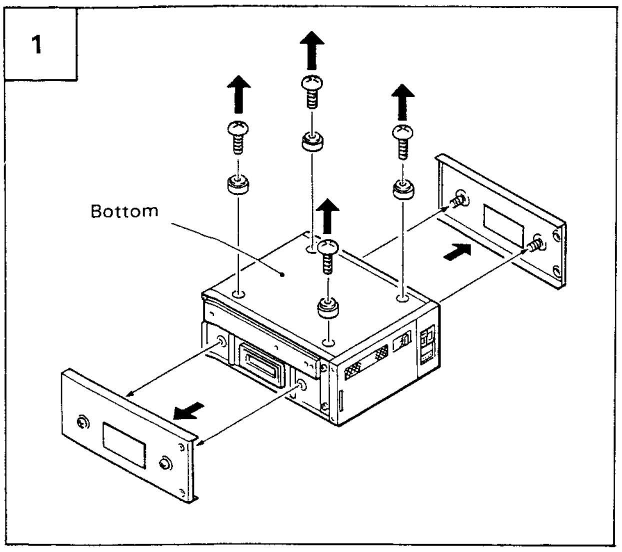
2-2. INSTALLATION IN A 19-INCH RACK

When CCU-360/360P is installed in a 19-inch rack (on the market), provide RMM-3601 (Optional).

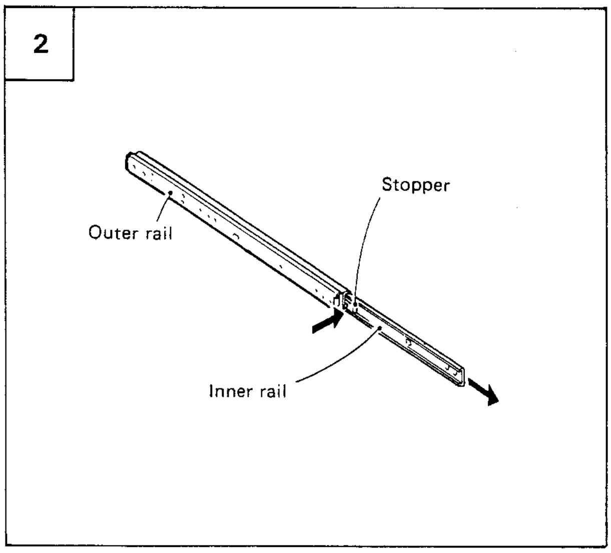
RMM-3601 is composed of parts as shown in the figure.


Rail bracket
×4
×1
Handle (right)
×1
Handle (left)
Rail
×2
L-shaped wrench
×1
ⓔ
×4
ⓐ (RK5×14)
×6
ⓕ
×6
Screw kit
×1
ⓑ (B4×12)
×8
ⓖ
×8
ⓒ (B4×8)
×8
ⓗ
×8
ⓓ
×8
ⓘ
×8

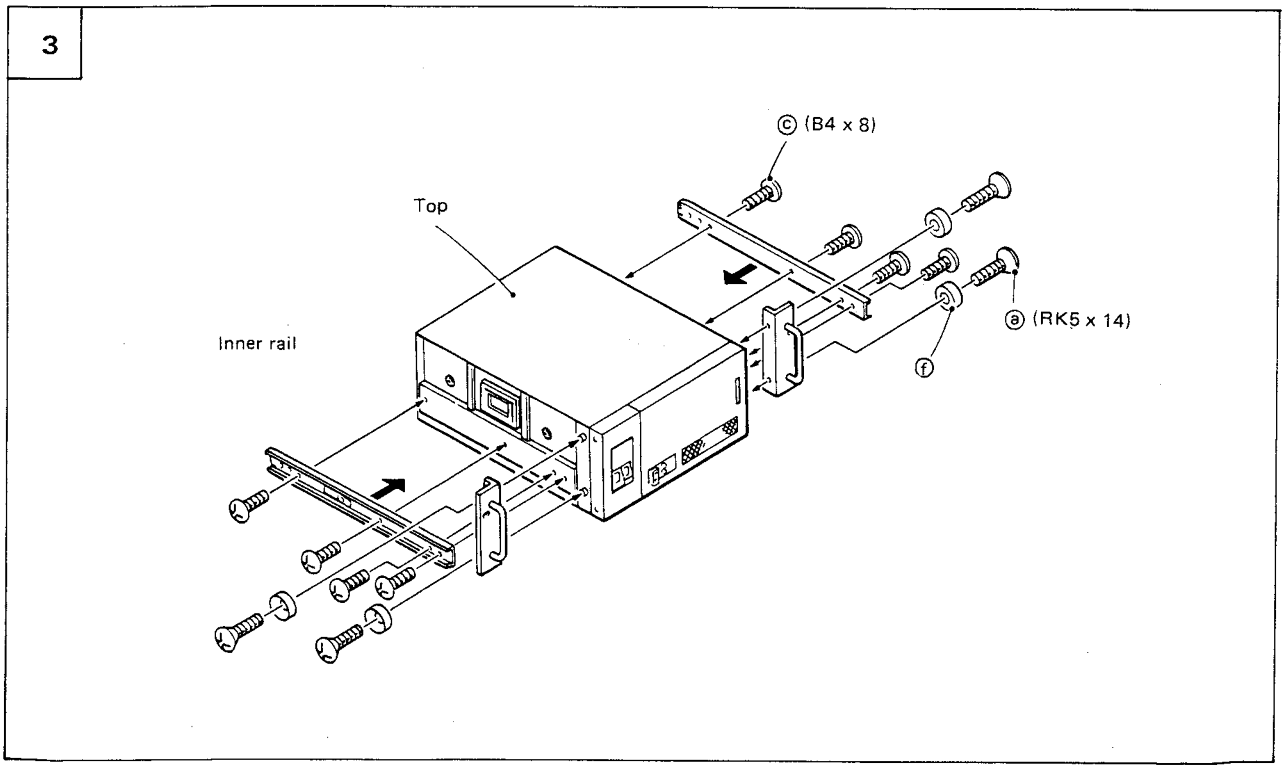
1. Remove screws securing the side panel of CCU-360/360P. Remove screws securing the four feet on the bottom.



2. Push in the inner rail stopper and pull out the outer rail.

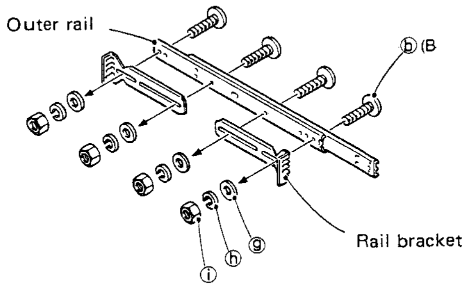

2
Stopper
Outer rail
Inner rail

3. Install the outer rails removed in step $\boxed{2}$ to CCU-360/360P using the four screws ⓒ.
   Install both right and left handles using the two screws ⓐ.


3
ⓒ (B4 x 8)
Top
Inner rail
ⓐ (RK5 x 14)
ⓕ

4. Using the screws ⓑ (B4×12), loosely attach the rail brackets to both outer rails.

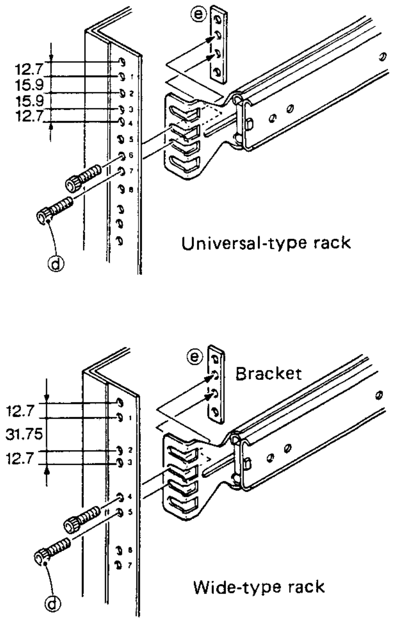
4


Outer rail
ⓑ(B
Rail bracket
ⓖ
ⓗ
ⓘ

5. Adjust the length of the rail bracket in step [4] so as to fit the depth of the rack and tighten the screws ⓑ.

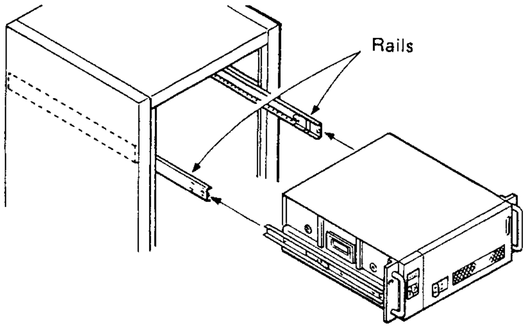
6. Install the rail bracket in step [5] using the two hexagon socket head bolts.

6


ⓔ
12.7
15.9
15.9
12.7
ⓓ
Universal-type rack
ⓔ
Bracket
12.7
31.75
12.7
ⓓ
Wide-type rack

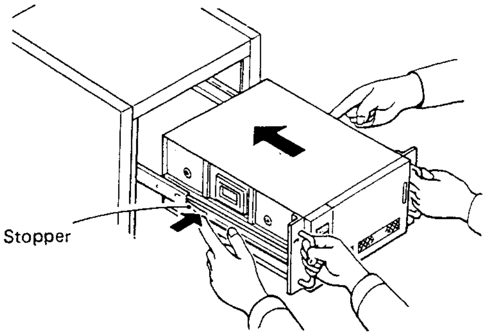
7. Pull these rails out.

7



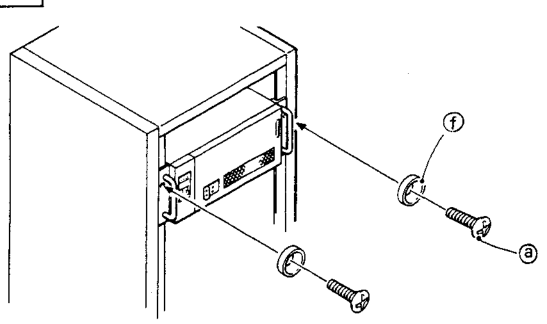
8. Push in both inner rail stopper to release the lock, and slide the CCU-360/360P into the rack.

8



9. Secure the CCU-360/360P into the rack with the screws ⓐ (RK5×14) and the washer ⓕ.

9



2-3. OPERATING ENVIRONMENT

Operating temperature: 0°C to +45°C

1. Install in a dry, well ventilated location.
2. Do not install in a room at a high temperature or near a heat source.
3. Do not install in a place where there is a lot of dust or vibration.
4. Do not install in a strong electric or magnetic field.
5. Do not install in a place where the unit can be exposed to direct sunlight or any other strong light such as electronic flashlight.

SECTION 3
SERVICE INFORMATION

3-1. GENERAL DESCRIPTION OF CIRCUIT BOARD

SG-9/9A BOARD

It contains the pulse generating circuit and genlock circuit. Pulse generating circuit generates the synchronizing and timing pulses such as clamping, blanking, sampling pulses etc. . . . And generated pulses are fed to the deflection circuit and video signal processing circuit as reference pulses. Genlock circuit contains the SYNC/SC separating circuit. When the genlock signal is fed into the CCU, the CCU changes to genlock mode automatically.

The phases of HD pulse and subcarrier can be adjusted on the control panel (BKP-3601) through the AT-26 board. So the alignment of H phase and subcarrier phase with another camera system can be performed easily.

VA-28 BOARD

It contains the video signal amplifier, white clipping, blanking cleaning and black setting circuits for the R, G and B signals fed from the camera head via the triaxial cable or the multicore cable.

It contains the signal selection circuits for PIX and WF output terminals. Signal selection is controlled by the control panel, and selected signals are output from PIX OUT or WF OUT terminal on the reare panel of CCU-360/360P.

It also contains the return video circuit which selects the RETURN VIDEO 1 or 2 and mixes the return video signal with the camera head signals. Selection or mixing of return video signal is chosen by the camera head, and selected or mixed return video signal is fed to the camera head.

EN-31/31A BOARD

It contains the color-bar generating circuit, encoder circuit, matrix circuit for I (V), Q (U) and Y signals and matrix circuit of Y and color difference signals for BETA-CAM system.

It also contains the SATURATION control circuit and CONTRAST control circuit which can be controlled by control panel.

AT-26 BOARD

It contains three CPUs. Control of the video signal circuits, processing of control datas and exchange of datas and commands with control panel, RCP and MSU are done by respective CPU.

Communication with external CPUs (such as control panel) is performed by 8-bit serial data.

AU-56 BOARD

It contains the audio signal circuits such as INCOM, MIC and PGM circuits. Two intercom lines (ENG and PROD) are provided.

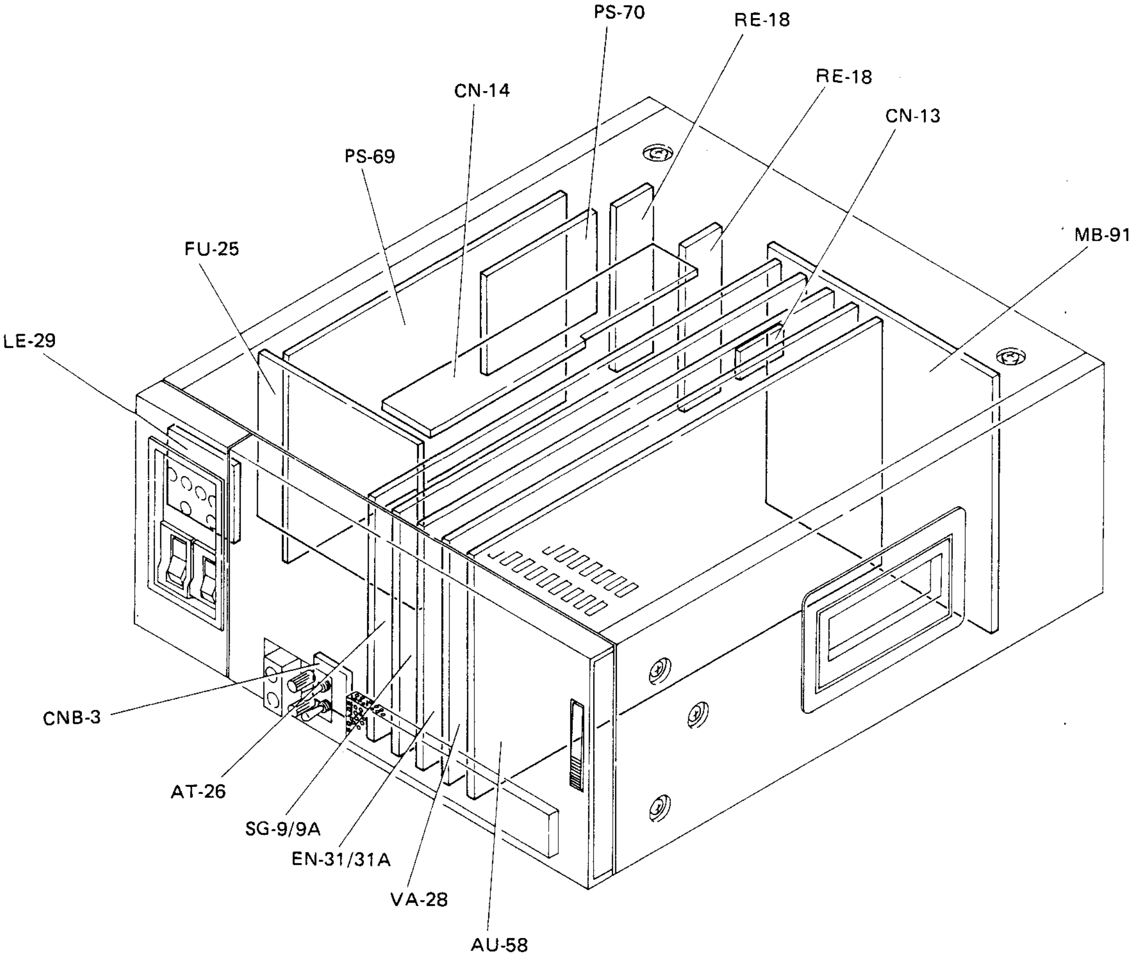
A PGM (Program Audio) line also be provided and you can monitor the PGM on the camera head side.

INCOM, MIC and PGM signals are sent between the CCU and the camera head via the triaxial cable or the multicore cable.

POWER UNIT

The power block is designed as a plug-in type unit for easy attachment and removal. The power unit provides a transformer and DC power supply circuit for CCU-360/360P moreover a transformer for the camera head. The voltage of 240V AC can be supplied from the power supply unit to the camera head via the triaxial cable or multicore cable.

3-2. LOCATION OF MOUNTED CIRCUIT BOARD


PS-70
RE-18
RE-18
CN-14
CN-13
PS-69
MB-91
FU-25
LE-29
CNB-3
AT-26
SG-9/9A
EN-31/31A
VA-28
AU-58

3-3. FUNCTION OF CONTROL

MAIN POWER switch and indicator

The power supply to all units of the camera system of the BVP-360 such as the BVP-360 camera head, CCU-360 camera control unit, BKP-3601 camera control panel and remote control panel, is turned on and off by this switch. When the power is turned on, the associated indicator lights.

CAMERA POWER switch and indicator

When the MAIN POWER switch is set to ON and the camera power button on the camera control panel or the remote control panel is lit, the power supply to the camera head can be turned on and off.

ALARM indicator

CABLE SHORT

Lights when the overcurrent has flown into the power supply line, or the triaxial cable or the multicore cable has short-circuited.

CABLE OPEN

Lights when the BVP-360 is not connected with CCU or the connecting cable is broken down.

CCU

Lights when something is wrong with the power supply line for the CCU. (such as short-circuit)

RCP

Lights when something is wrong with the power supply for the control panel (BKP-3601) or the remote control panel (RCP-3620/3621/3631).

NOTE: If only one of the indicators lights, CCU and control panel can not work.

FUSE BOX

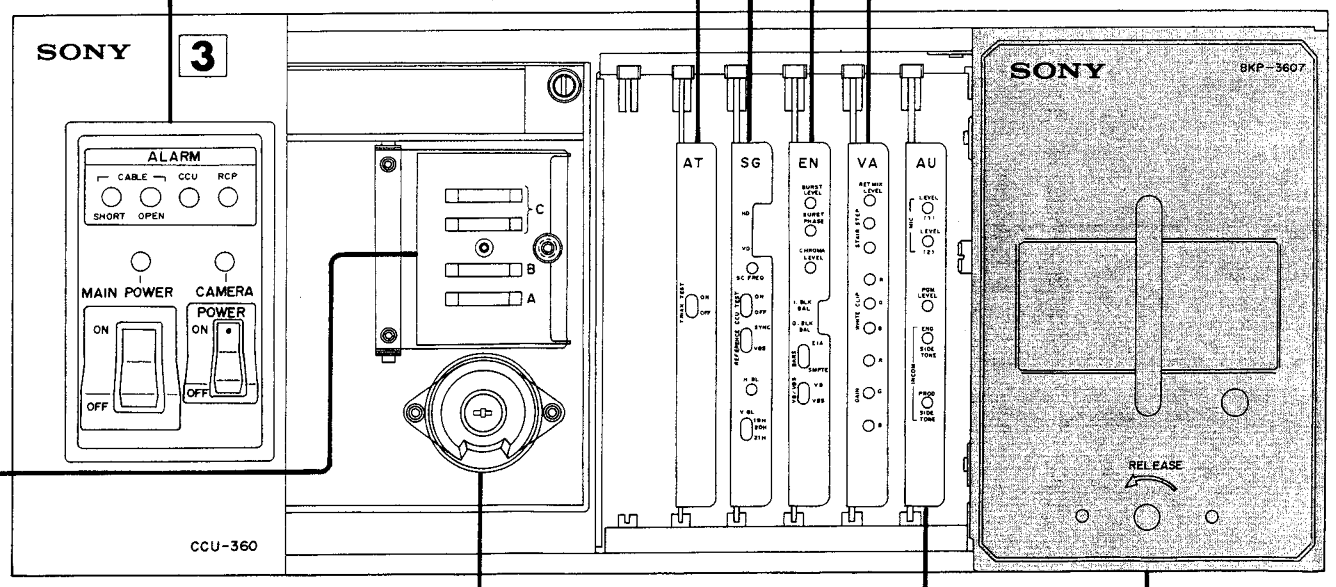
A: Fuse for main power line

B: Fuse for camera power line.

C: Spare

VOLTAGE SELECTOR

Select the position according to voltage of using power source. (240V/220V/120V/100V)



COMPARTMENT
for
BKP ADAPTOR

AT-26 BOARD

TRIAX TEST (S1)

When turned on, the color-bar signal generated in the triax board kit (BKP-3605) in the camera head is fed to the CCU instead of the camera head signal. Used for alignment of TRIAX system.

SG-9/9A BOARD

SC FREQ (RV2)

Adjusts so that the subcarrier frequency is 3,579,545±2 Hz (NTSC)/4,433,619±2 Hz (PAL).

CCU TEST (S1)

When turned on, R, G and B signals fed from the camera head are switched over to R, G and B signals of the color-bar generator in the CCU.

SYNC/VBS (S2)

Switch over according to the genlock signal to be input. Should be set to the SYNC position when the reference SYNC and subcarrier signals are separately input to the genlock input terminal. Should be set to the VBS position when the VBS signal is input to the genlock input terminal.

H BL (S3) (NTSC only)

Performs the H blanking width adjustment. Changes the H blanking width by 70 nsec within approx. 10.27 μsec to 10.76 μsec.

V BL (S4) (NTSC only)

Changes over the V blanking width to 19H, 20H or 21H.

EN-31/31A BOARD

BURST LEVEL (RV20)

Adjusts the burst signal level of VBS output signals.

BURST PHASE (RV21)

Adjusts the burst signal phase of VBS output signals.

CHROMA LEVEL (RV39)

Adjusts the chroma signal level of VBS output signals.

I (V) BLK BAL (RV30), Q (U) BLK BAL (RV35)

Performs the black balance (carrier balance) adjustment of composite video signal.
Adjust so that the carrier signal does not appear where no color signal exists.

BARS EIA/SMPTE (95%/EBU) (S1)

Switches over the color-bar signal to EIA or SMPTE (NTSC)/95% or EBU (PAL).

VB/VBS (S2)

When set to the VB position, the VB (video, burst) signal is output from VBS4/VB output terminal on the reare panel. When set to the VBS position, the composite video signal is output from VBS4/VB output terminal.

VA-28 BOARD

RET MIX LEV (RV33)

When pressing the MIX VF switch behind the blank panel of BVP-360, the return video signal mixed with Y signal of the camera head can be seen on the viewfinder. The mixing ratio can be adjusted by this control.

STAIR STEP (RV28, RV29)

Performs the WF MODE control signal adjustment when the R, G and B signals are separately displayed on the waveform monitor.

WHITE CLIP R (RV2), G (RV6), B (RV10)

Perform the white clip level adjustment of R,G and B signals. Adjust so that the video level is clipped at 110 IRE (NTSC)/750 mV (PAL).

GAIN R (RV1), G (RV5), B (RV9)

Perform the level adjustment of R, G and B signals.

VA-58 BOARD

MIC LEVEL (1) (RV8), LEVEL (2) (RV9)

Perform the level adjustment of EXT MIC audio signal fed from the camera head.

PGM LEVEL (RV12)

Performs the level adjustment of the PGM signal fed to the camera head.

ENG SIDE TONE (RV2)

Performs the side tone adjustment of the incom line (ENG).

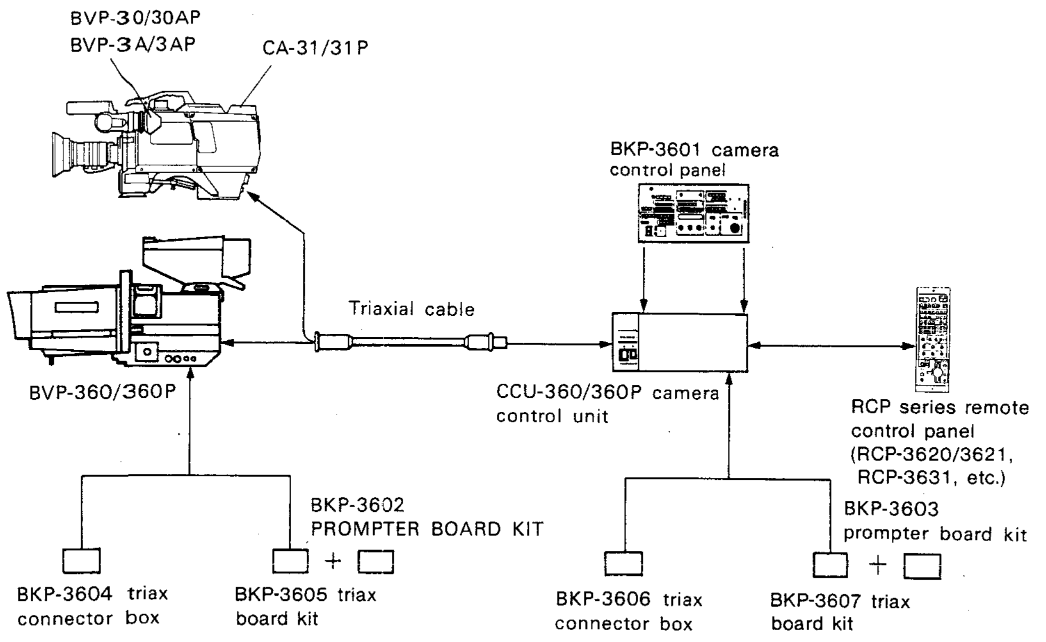
PROD SIDE TONE (RV6)

Performs the side tone adjustment of the incom line (PROD).

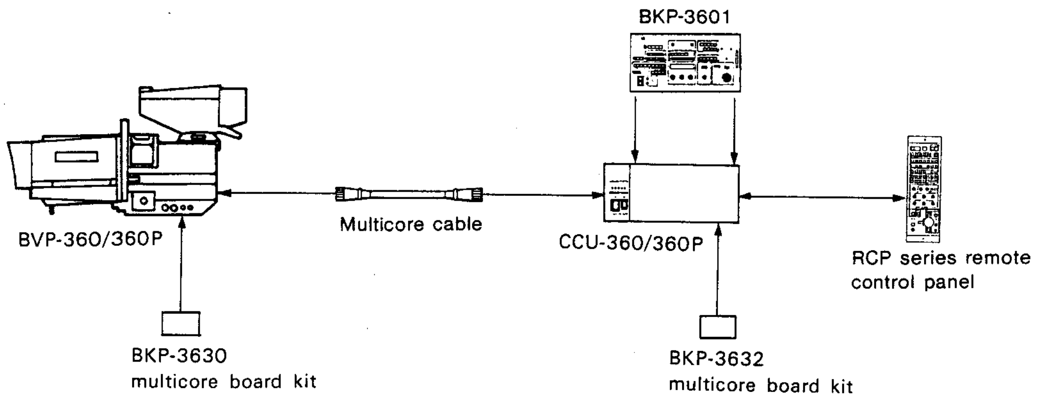
3-4. SYSTEM CONFIGURATION

3-4-1. Basic System Configuration

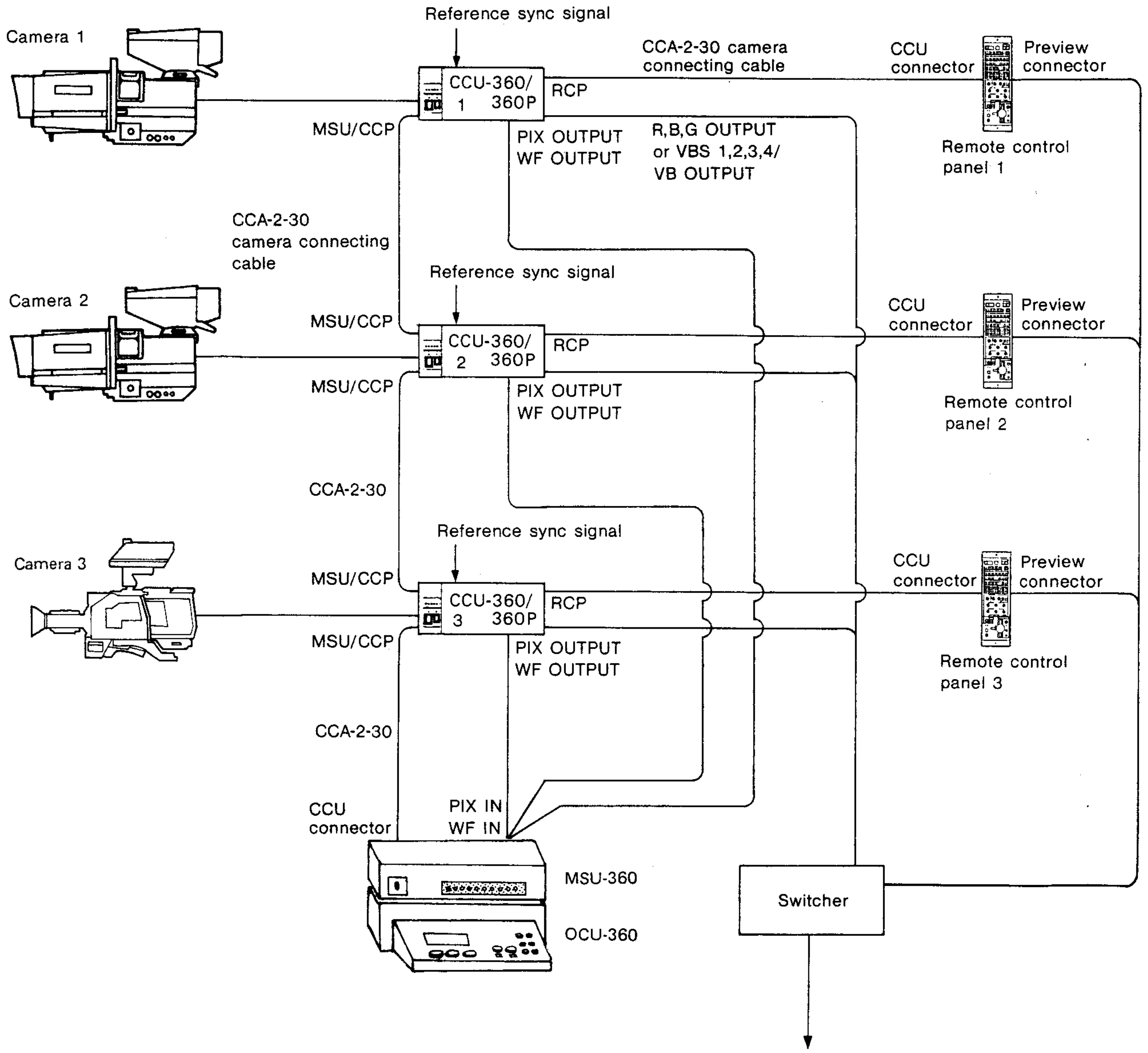
- When the triaxial cable is used


BVP-30/30AP
BVP-3A/3AP
CA-31/31P
BKP-3601 camera control panel
Triaxial cable
BVP-360/360P
CCU-360/360P camera control unit
RCP series remote control panel (RCP-3620/3621, RCP-3631, etc.)
BKP-3602 PROMPTER BOARD KIT
BKP-3603 prompter board kit
BKP-3604 triax connector box
BKP-3605 triax board kit
BKP-3606 triax connector box
BKP-3607 triax board kit

- When the multicore cable is used

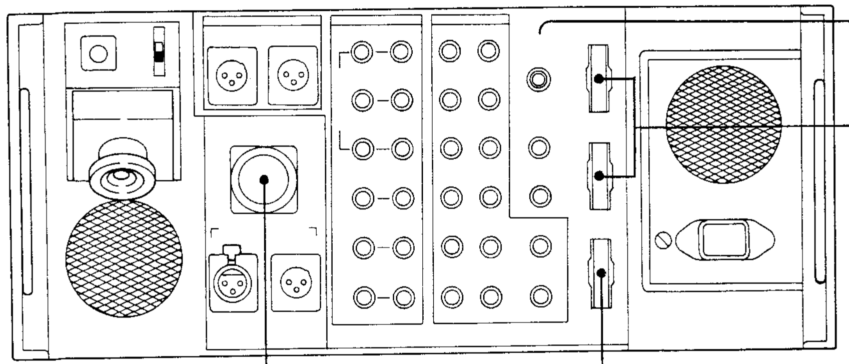

BKP-3601
BVP-360/360P
Multicore cable
CCU-360/360P
RCP series remote control panel
BKP-3630 multicore board kit
BKP-3632 multicore board kit

3-4-2. Multiple Camera Operation in Combination with the MSU-360 and the OCU-360


Camera 1
Reference sync signal
CCA-2-30 camera connecting cable
CCU connector
Preview connector
CCU-360/ 1 360P
RCP
MSU/CCP
PIX OUTPUT
WF OUTPUT
R,B,G OUTPUT or VBS 1,2,3,4/ VB OUTPUT
Remote control panel 1
CCA-2-30 camera connecting cable
Camera 2
Reference sync signal
MSU/CCP
CCU-360/ 2 360P
RCP
CCU connector
Preview connector
MSU/CCP
PIX OUTPUT
WF OUTPUT
Remote control panel 2
CCA-2-30
Camera 3
Reference sync signal
MSU/CCP
CCU-360/ 3 360P
RCP
CCU connector
Preview connector
MSU/CCP
PIX OUTPUT
WF OUTPUT
Remote control panel 3
CCA-2-30
CCU connector
PIX IN
WF IN
MSU-360
OCU-360
Switcher

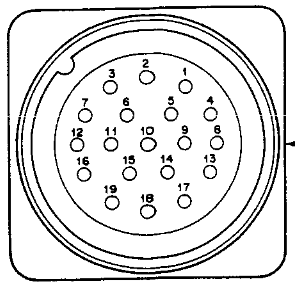
- The MSU-360 and OCU-360 make it possible to connect a maximum of 8 cameras (Up to 32 cameras with the extension unit), control and set them up.

3-5. CONNECTOR'S PIN FUNCTION



INCOM/TALLY/PGM

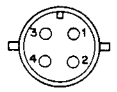
— EXT SIDE —

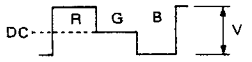


PIN No.	SIGNAL	I/O	SPECIFICATION
1	PGM (H)	I	PGM AUDIO INPUT LEV. = −20dBs/0dBm (Selected by SW on AU-58 board)
2	PGM (C)	I	
3	PGM (GND)	—	
4	R TALLY (X)	I	TALLY ON: SHORT or 12~24V DC VOLTAGE is added between (X) and (Y)
5	R TALLY (Y)	I	
6	G TALLY (X)	I	TALLY ON: SHORT or 12~24V DC VOLTAGE is added between (X) and (Y)
7	G TALLY (Y)	I	
8	CHU/CCU 1 (H)	O	INCOM 1 (ENG) SYSTEM RECEIVE OUTPUT OUTPUT LEV.=0dBm BALANCED
9	CHU/CCU 1 (C)	O	
10	GND	—	GND
11	CHU/CCU 2 (H)	O	INCOM 2 (PROD) SYSTEM RECEIVE OUTPUT OUTPUT LEV.=0dBm BALANCED
12	CHU/CCU 2 (C)	O	
13	SYS 1 TALK (H)	I	INCOM 1 (ENG) SYSTEM TALK INPUT INPUT LEV.=−16dBs, 5~10kΩ, BALANCED
14	SYS 1 TALK (C)	I	
15	SYS 2 TALK (H)	I	INCOM 2 (PROD) SYSTEM TALK INPUT INPUT LEV.=−16dBs, 5~10kΩ, BALANCED
16	SYS 2 TALK (C)	I	
17	INCOM 1 (GND)	—	SHIELD, INCOM 1 (ENG)
18	NC	—	Non-connection
19	INCOM 2 (GND)	—	SHIELD, INCOM 2 (PGM)

WF MODE

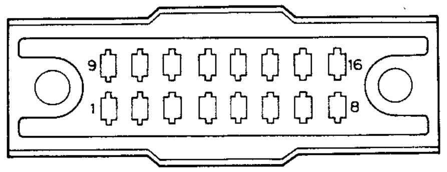
— EXT SIDE —



PIN No.	SIGNAL	I/O	SPECIFICATION
1	SEQ CTL (GND)	—	(OPEN COLLECTOR) SEQ MODE: SHORT SEQ OFF: OPEN
2	SEQ CTL	O	
3	STAIR CASE	O	 DC R G B V $V=12^{+1}_{-6}V$ DC=0±2V
4	STAIR CASE (GND)	—	

MSU/CCP

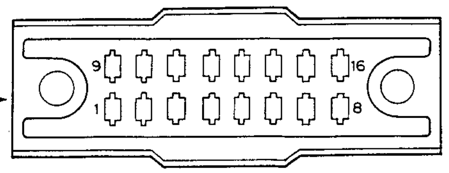
— EXT SIDE —



PIN No.	SIGNAL	I/O	SPECIFICATION
1	GND	—	—
2	GND (CP)	—	—
3	CCU-CP DATA (X)	O	CCU SERIAL DATA OUTPUT: 0.7~4.3Vp-p, Zo=68Ω BALANCED
4	CCU-CP DATA (Y)	O	
5	CCU-CP DATA (GND)	—	
6	MSU-CCU IN/OUT (X)	I/O	MSU↔CCU SERIAL DATA: RS422 Equivalent
7	MSU-CCU IN/OUT (Y)	I/O	
8	MSU-CCU (GND)	—	
9	+30V (CP)	O	CONTROL PANEL POWER: +30V DC
10	GND (CP)	—	
11	CP-CCU DATA (X)	I	CP SERIAL DATA INPUT: 0.7~4.3Vp-p, BALANCED
12	CP-CCU DATA (Y)	I	
13	CP-CCU DATA (GND)	—	
14	SEQ SYNC IN (X)	I	SEQ CONTROL INPUT: BALANCED
15	SEQ SYNC IN (Y)	I	
16	SEQ SYNC (GND)	—	

RCP

— EXT SIDE —

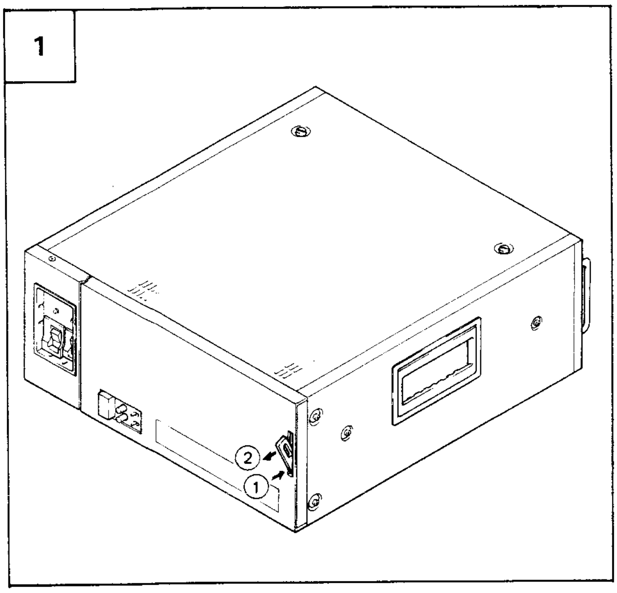


PIN No.	SIGNAL	I/O	SPECIFICATION
1	CABLE SHIELD	—	—
2	GND	—	—
3	NC	—	Non-connection
4	NC	—	Non-connection
5	NC	—	Non-connection
6	CCU-RCP DATA (X)	O	CCU SERIAL DATA OUTPUT: 0.7~4.3Vp-p, Zo=68Ω BALANCED
7	CCU-RCP DATA (Y)	O	
8	CCU-RCP DATA (GND)	—	
9	+30V (RCP)	O	RCP POWER: +30V DC
10	GND (RCP)	—	—
11	NC	—	Non-connection
12	NC	—	Non-connection
13	NC	—	Non-connection
14	RCP-CCU DATA (X)	I	RCP SERIAL DATA INPUT: 0.7~4.3Vp-p, BALANCED
15	RCP-CCU DATA (Y)	I	
16	RCP-CCU DATA (GND)	I	

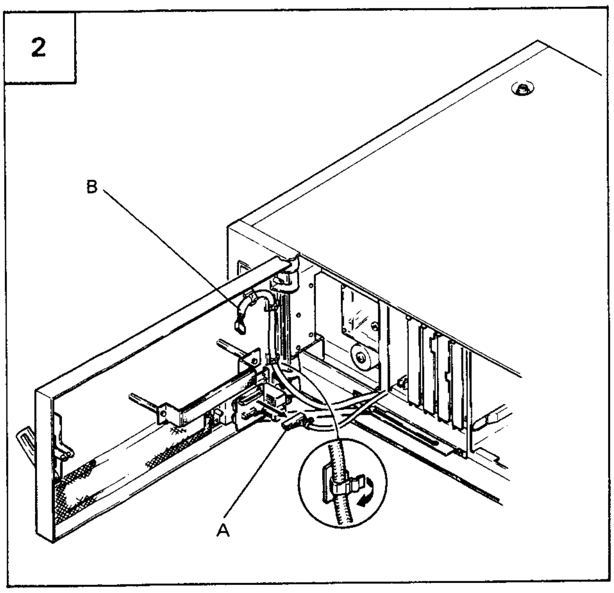
SECTION 4
REPLACEMENT OF MAIN PARTS

4-1. INSTALLATION OF BKP-3601 TO CCU-360/P

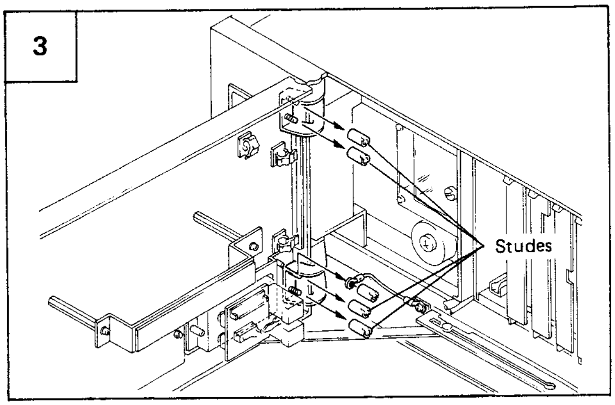
1. Push the bottom of handle in the direction shown by the arrow ①. Pull the handle in the direction shown by the arrow ② and open the blank panel.



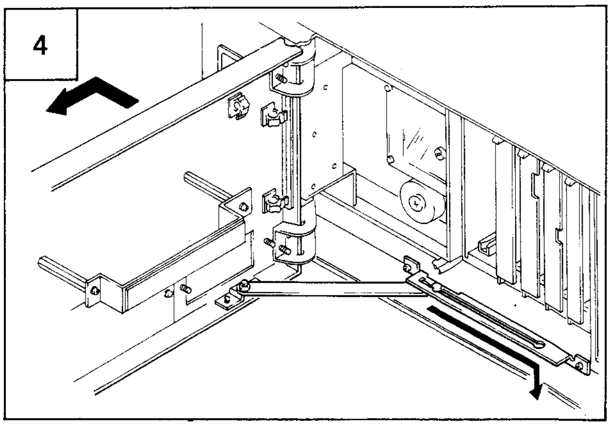
2. Disconnect the INCOM harness A.
   Remove the harness B fixed by the cable clamp.



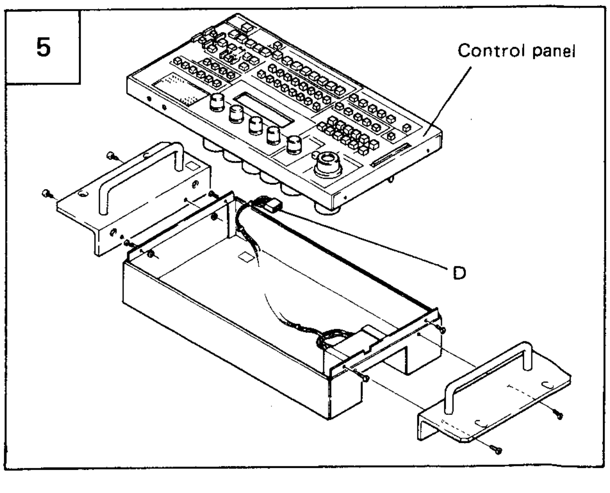
3. Remove the four studes which fix the blank panel to CCU-360/P. Remove the four studes which fix the INCOM bracket and earth lug, and remove the earth lug.



4. Slide the stay in the direction shown by the arrow, and remove it.
   Remove the blank panel from CCU-360/P.

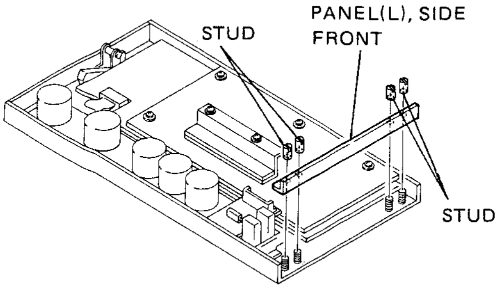


5. Remove the control panel from the blank panel case. Remove the four screws and pull the only control panel.
   Disconnect the connector D.



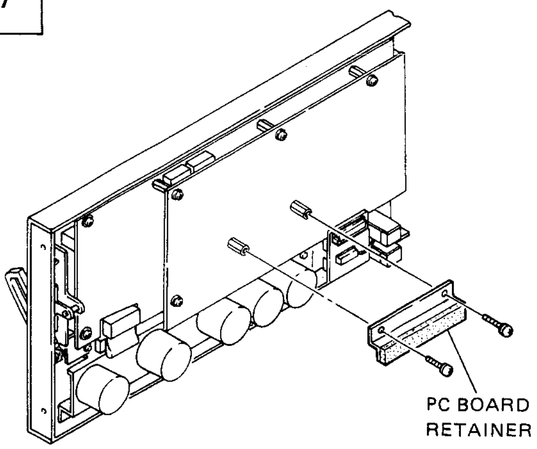
6. Remove four studes, and remove the SIDE FRONT PANEL (L) from control panel.

6


STUD
PANEL(L), SIDE FRONT
STUD

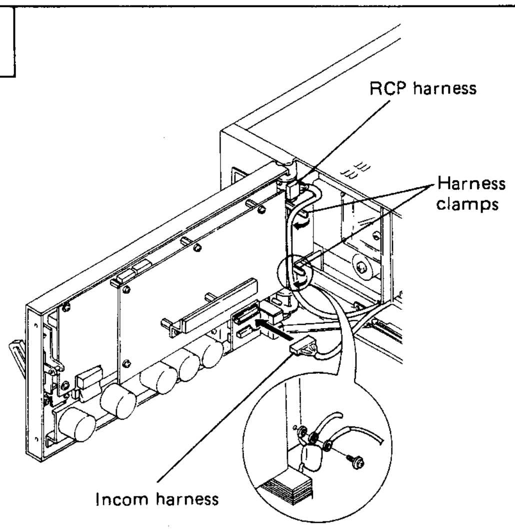
7. Remove the board retainer and re-attach it in direction as shown below.

7


PC BOARD RETAINER

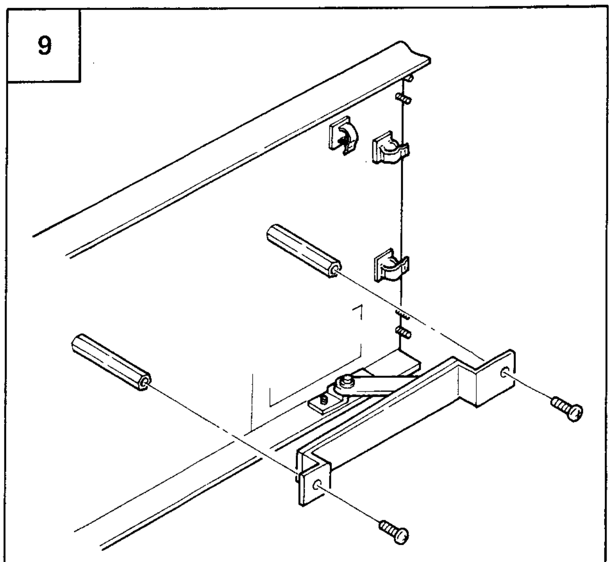
8. Install the stay to the CCU-360.
Install the control panel instead of the blank panel and fix it with the four studes removed in Step 3. Fix the earth lug and the harness clamp with one screw. Connect the RCP harness to the CP-80 board and the INCOM harness to the CNB-3 board respectively.
Fix the harness with the harness clamp.

8


RCP harness
Harness clamps
Incom harness

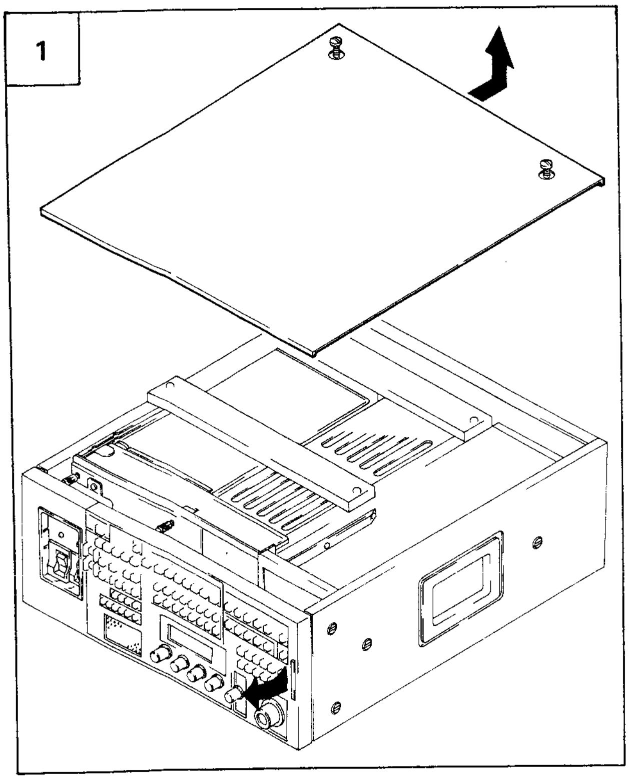
9. Remove the board retainer fixed with blank panel, and re-attach it to blank panel in the opposite direction.
Attach the stay removed in step 6 to blank panel. Install the blank panel to blank panel case instead of the control panel.

9

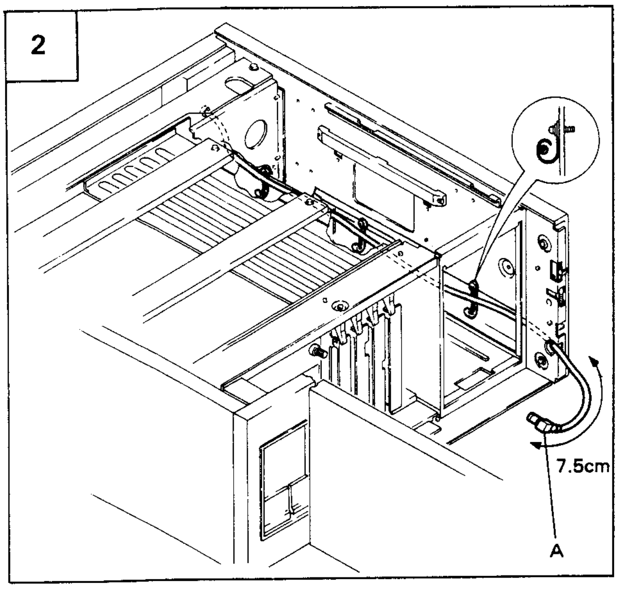


4-2. INSTALLATION OF BKP-3606

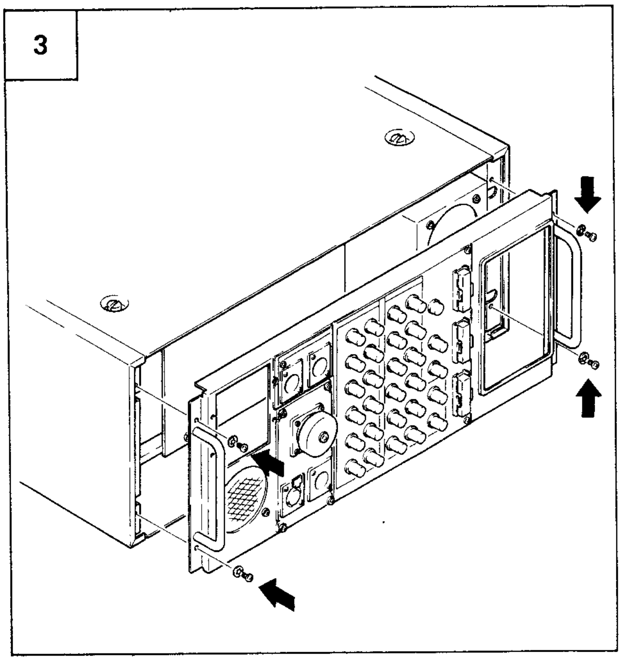
1. Loosen the two coin screws. Remove the top panel by sliding and pulling it in the direction shown by the arrow. Open the control panel or blank panel.



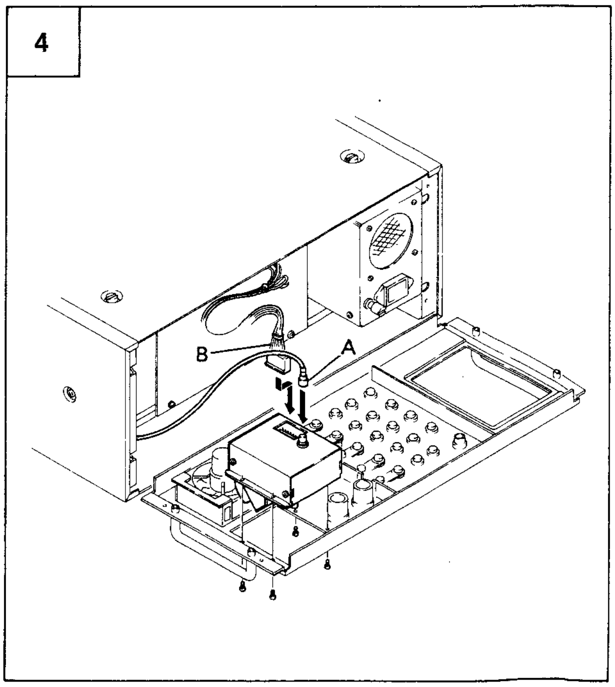
2. Install the BKP-3606 cable (A) by putting it into the cable clampers which are mounted on the CCU-360. The cable should be positioned as shown in fig. bellow so that the cable stick out approximately 7.5 cm from the front end of the chassis.



3. Remove the four screws shown in the figure below and remove the rear panel.



4. Install BKP-3606 to the rear panel of CCU-360/P by using four screws.
Connect the cable A and harness B as shown below.

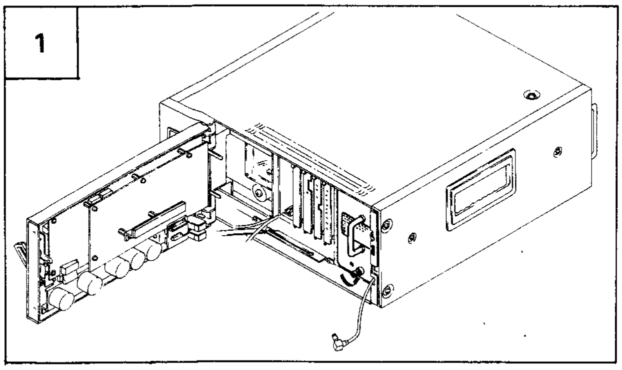


5. Install the rear panel where it was.

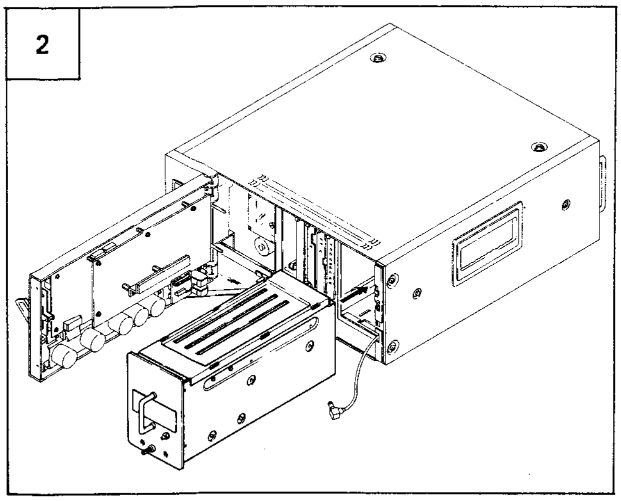
4-3. INSTALLATION OF BKP-3607

NOTE: Install the BKP-3606 to CCU-360/P refering to 4-2. INSTALLATION OF BKP-3606 before installing of BKP-3607.

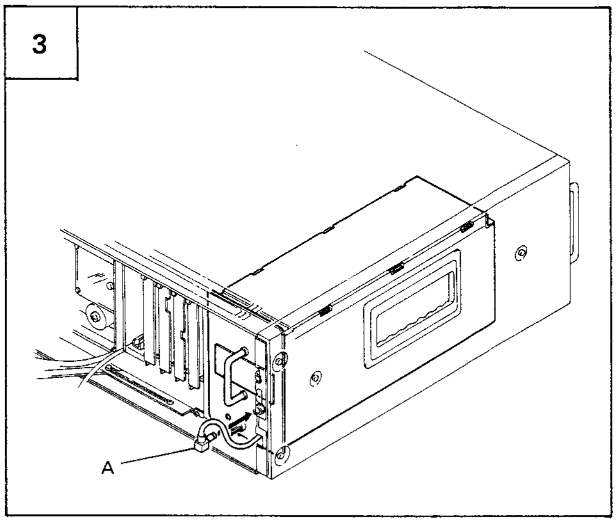
1. Install the top panel. Insert the BKP-3607 into CCU-360/P as shown in the figure below.



2. Turn the knob located in the bottom of BKP-3607 in the direction shown by the arrow and fix it. (When BKP-3607 is removed from CCU-360/P, turn the knob in the opposite direction of the arrow.)

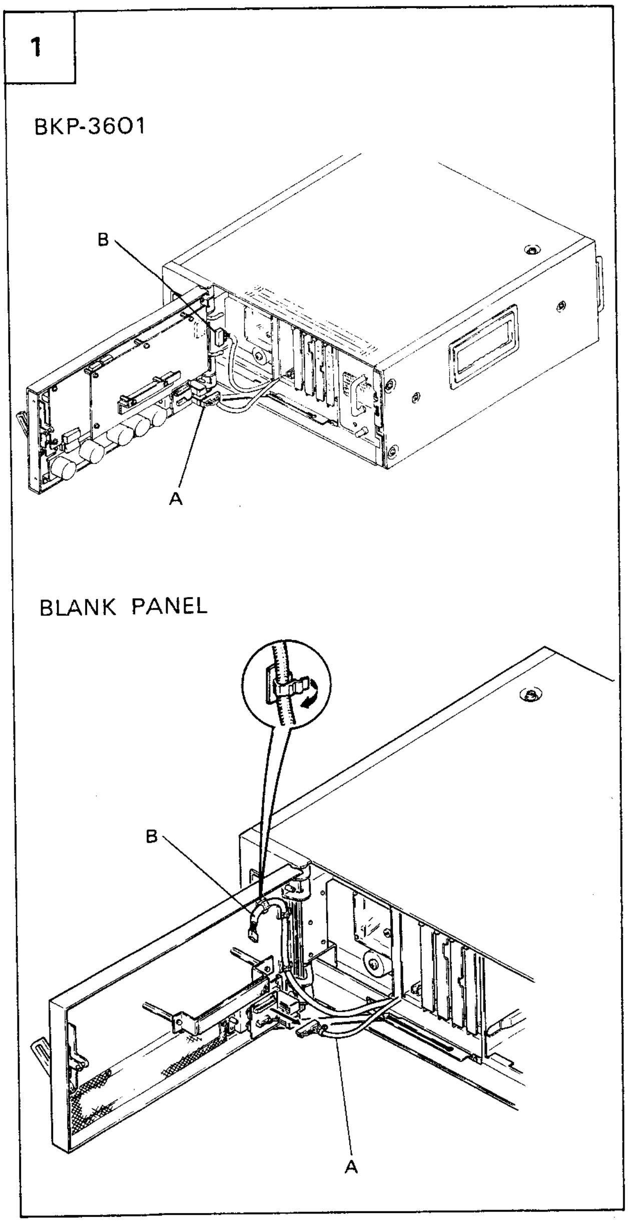


3. Connect the cable A to BKP-3607. When connect the cable A, form the cable as shown below. (If the slack of cable is lower, the control panel can not be shut.

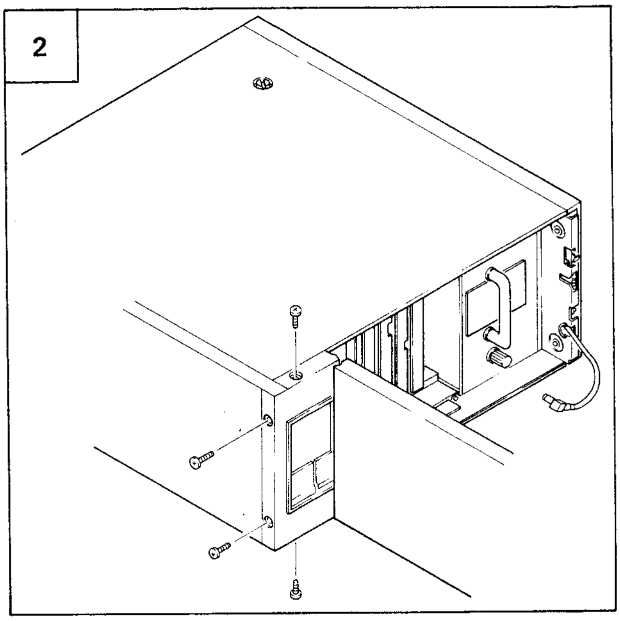


4-4 REPLACEMENT OF AC UNIT

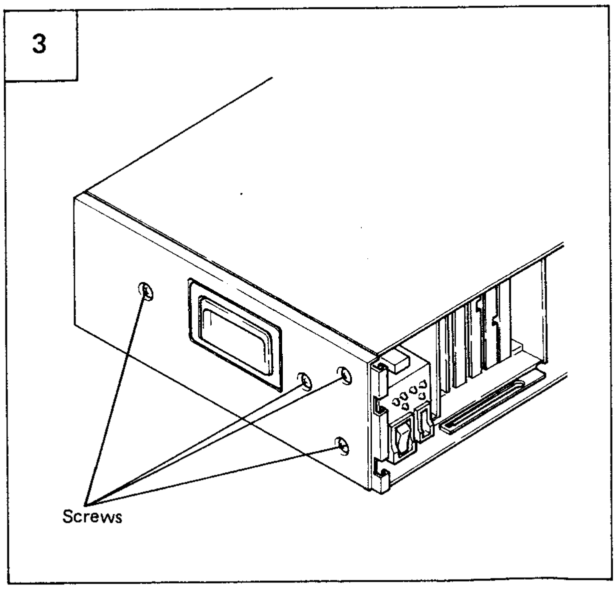
1. Disconnect the earth lug, the harnesses A and B from incom connector. Remove the harness clamps or the cable clamps.


1
BKP-3601
B
A
BLANK PANEL
B
A

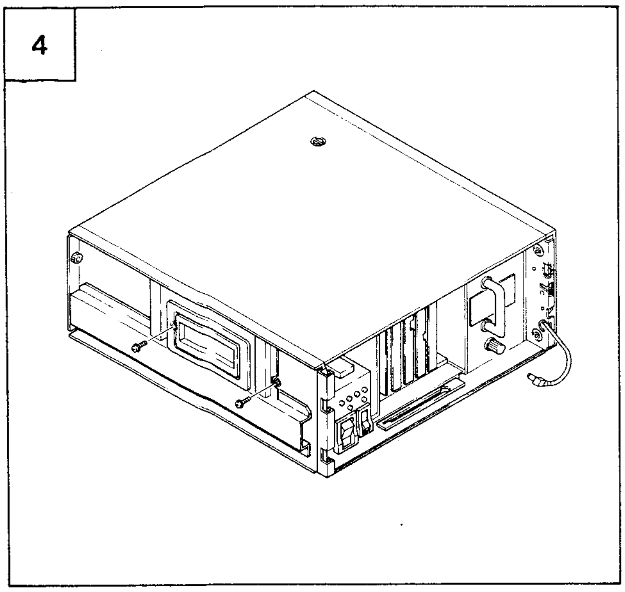
2. Remove the four screws and remove the front panel.



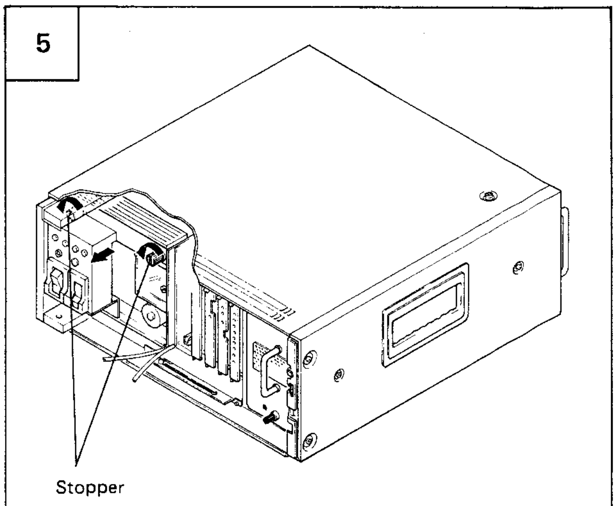
3. Loosen the four screws shown in the figure and remove the left side plate.



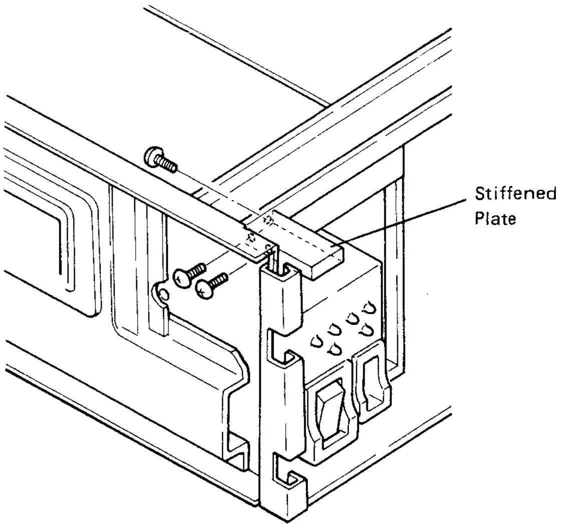
4. Remove the two screws which fix the AC unit to the side panel (LEFT).



5. Turn the knob of the AC unit in the direction shown



When it is hard to turn the stopper, remove the top plate and the stiffened plate.



6. When you install the AC unit, reverse the procedure.

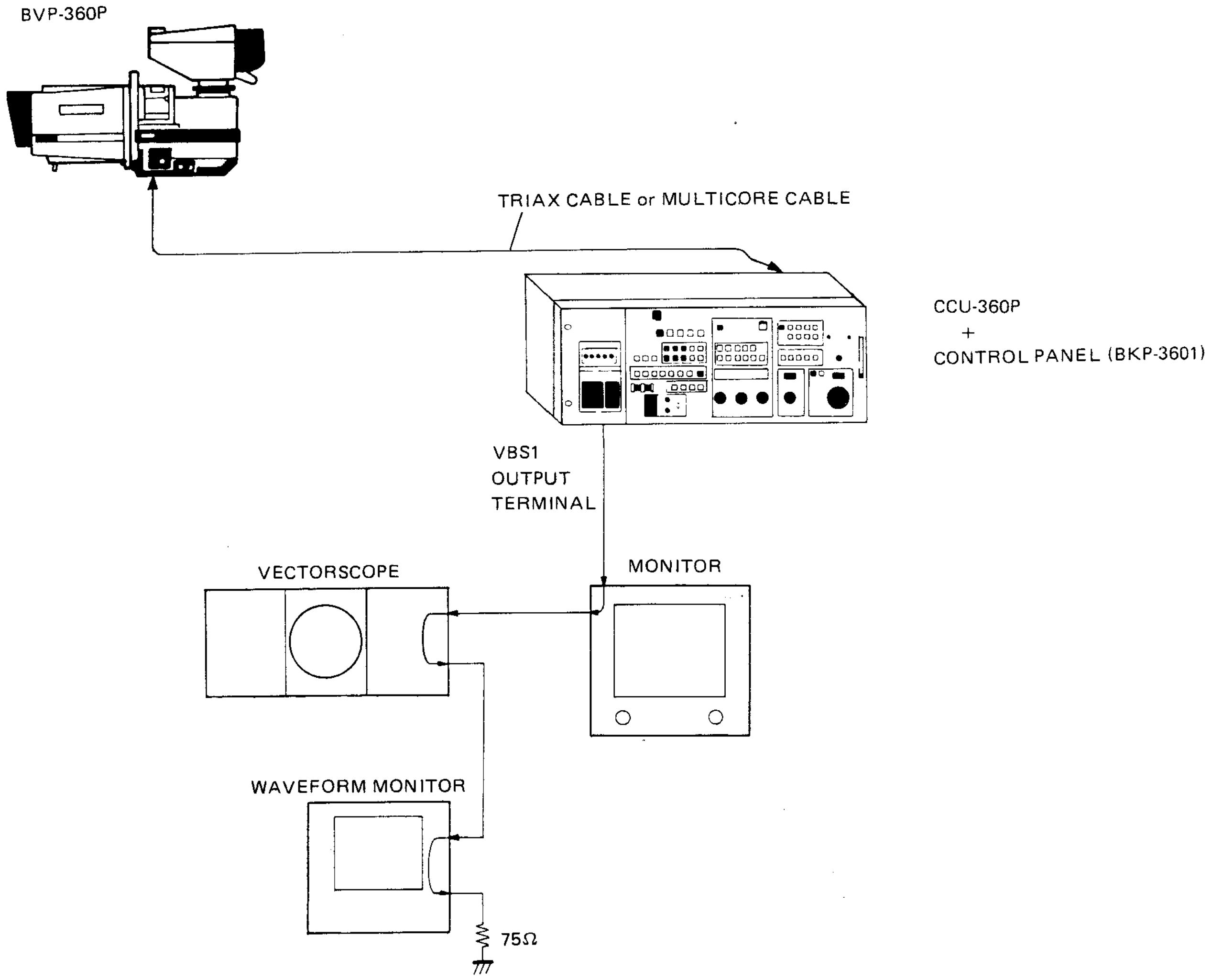
SECTION 5
ALIGNMENT

5-1. PREPARATION

5-1-1. Equipment Required

- Oscilloscope
- Waveform Monitor (WFM)
- Vectorscope
- Frequency Counter
- Extension Board (EX-63)
- Digital Voltmeter
- Monitor

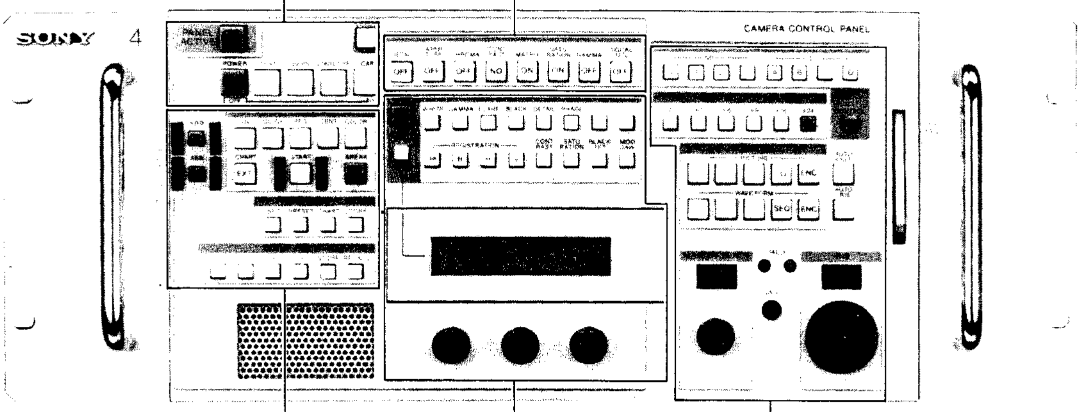
5-1-2. Connection


BVP-360P
TRIAX CABLE or MULTICORE CABLE
CCU-360P
+
CONTROL PANEL (BKP-3601)
VBS1
OUTPUT
TERMINAL
VECTORSCOPE
MONITOR
WAVEFORM MONITOR
75Ω

Note: Be sure that the BVP-360P, BKP-3601, BKP-3605 and BKP-3607 are adjusted completely.

5-1-3. Switch Setting Positions Before Adjustments

1. Warm up for about ten minutes.
2. Set the CCU-360P and CONTROL PANEL (BKP-3601) switches (except for especial indication) as follows:


SONY
4
PANEL ACTIVE
POWER
CAP
CAMERA CONTROL PANEL
OFF
NO
ON
REGISTRATION
ENC
SEQ
WAVEFORM

CAP: ON

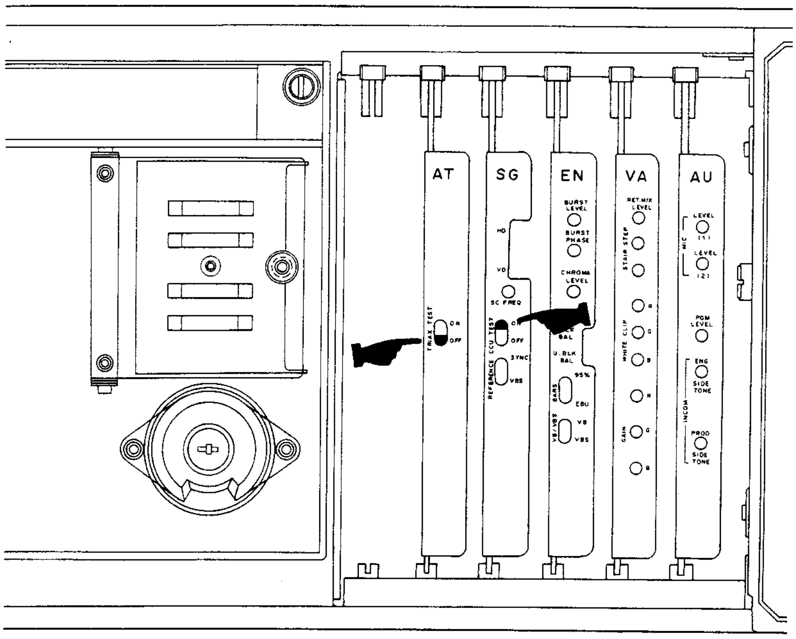
ALL LIGHT OFF

CONTROL PANEL
(BKP-3601)

NOT USE

ALL OFF

ND: 0
GAIN: 0


AT
SG
EN
VA
AU
TRIAX TEST
ON
OFF
HD
VD
SC FREQ
CCU TEST
REFERENCE
SYNC
VBS
BURST LEVEL
BURST PHASE
CHROMA LEVEL
BAL
U. BLK BAL
95%
EBU
VB
VBS
RET.MIX LEVEL
STAIR STEP
WHITE CLIP
GAIN
LEVEL (1)
LEVEL (2)
MIC
PGM LEVEL
ENG SIDE TONE
INCOM
PROD SIDE TONE

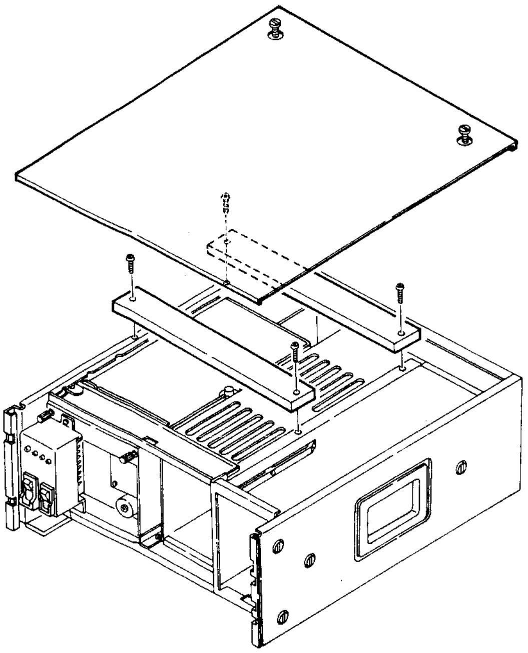
SIDE PANEL
(CCU-360P)

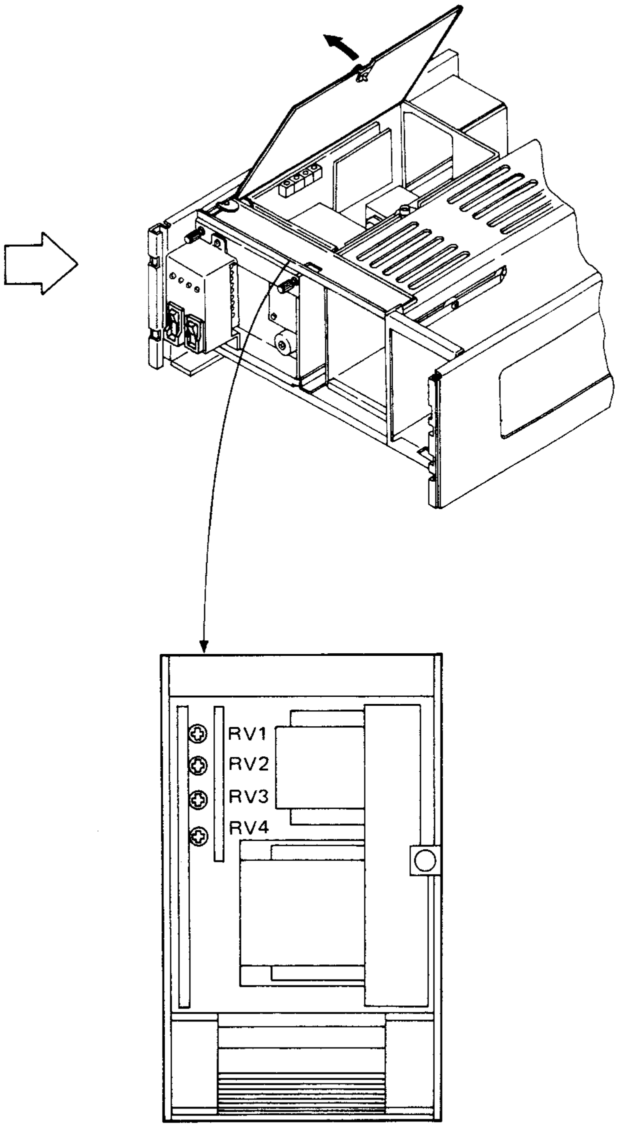
S1 (TRIAX TEST)/AT-26 board: OFF
S1 (CCU TEST)/SG-9A board: ON

5-2. POWER SUPPLY SYSTEM ADJUSTMENT

Note: This adjustment is not necessary if error is within ±1% of rated voltage.
When this adjustment is performed, all of the adjustments will be required.

Preparation : Remove the upper lid of the CCU-360P and stays.
And then, remove the upper lid of power unit.





POWER UNIT (TOP VIEW)

Measuring : Digital Voltmeter
To be exended: AU-58 board
Test point : TP1 (+9V), TP2 (+5V), TP3 (−9V), TP4 (+24V), E1 (GND) } on the EX-63 board
Adj. point : RV1 (+9V), RV2 (−9V), RV3 (+5V), RV4 (+24V) } on the PS-69 board
Specification : within ±1%

5-3. SG-9A BOARD ADJUSTMENT

Preparation : To be extended:SG-9A BOARD

5-3-1. Subcarrier Frequency Adjustment

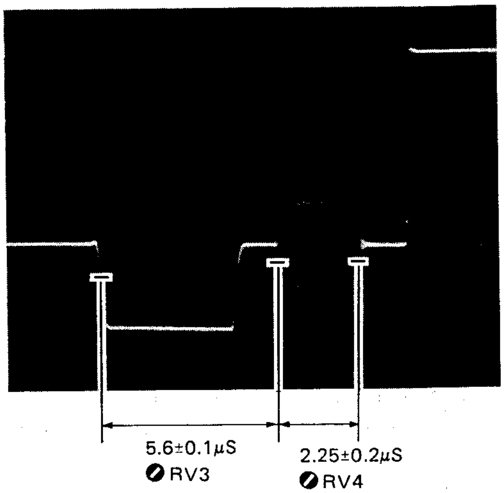
Note: Be sure no signal is supplied to INPUT terminal on the rear panel of CCU.

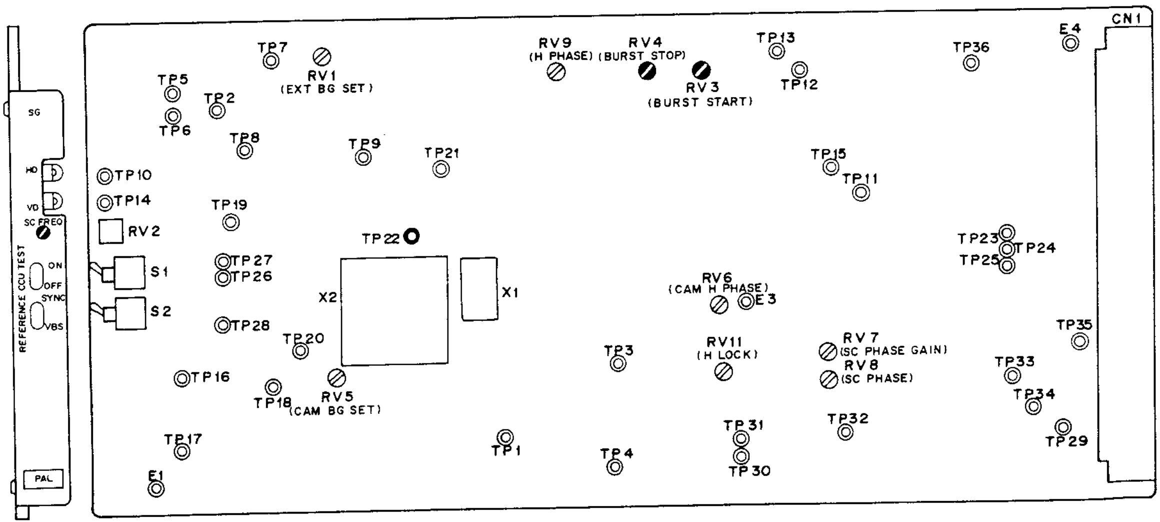
Measuring : Frequency counter, Digital Voltmeter
Test Point : TP22, TP34
Adj. Point : ⊘RV2, X2

1. Adjust the ⊘RV2 so that the DC level at TP22 is 2.5±0.1V.
2. Adjust the trimmer of X2 so that the frequency at TP34 is 4.433.618±2 Hz.

5-3-2. Burst Adjustment

Measuring : WFM
Adj. Point : ⊘RV3, ⊘RV4
Spec. : as follows




SG
HD
VD
SC FREQ
REFERENCE CCU TEST
ON
OFF
SYNC
VBS
PAL
TP7
RV1
(EXT BG SET)
TP5
TP2
TP6
TP8
TP9
TP21
TP10
TP14
TP19
RV2
TP22
S1
S2
TP27
TP26
TP28
X2
X1
TP20
TP16
TP18
RV5
(CAM BG SET)
TP17
E1
TP1
RV9
(H PHASE)
RV4
(BURST STOP)
RV3
(BURST START)
TP13
TP12
TP36
E4
CN1
TP15
TP11
TP23
TP24
TP25
RV6
(CAM H PHASE)
E3
TP3
RV11
(H LOCK)
RV7
(SC PHASE GAIN)
RV8
(SC PHASE)
TP35
TP33
TP34
TP29
TP31
TP30
TP32
TP4

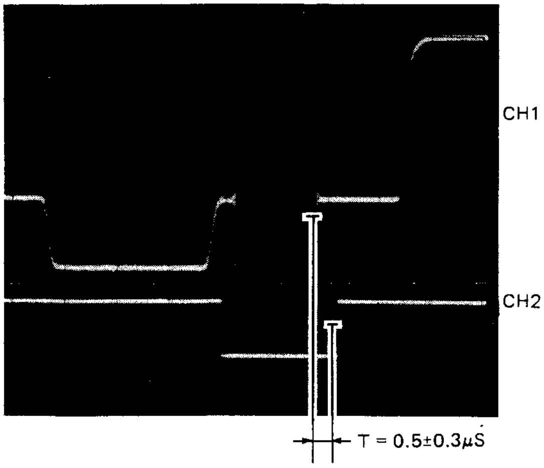
SG-9A board (component side)

5-3-3. Genlock Adjustment

Preparation : Supply VBS signal or SYNC signal to REFERENCE input terminal at the rear panel of CCU as a GENLOCK signal.
Switch over S2 (REFERENCE SYNC/VBS) on the SG-9A board, according to the GENLOCK signal.

a) EXT BURST GATE ADJUSTMENT

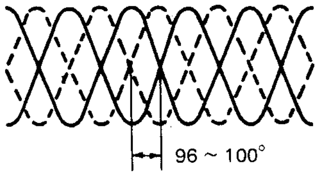
Measuring : Oscilloscope
Test Point : CH1→TP1
CH2→TP8
Adj. Point : ⊘RV1
Spec. : T=0.5±0.3 μS

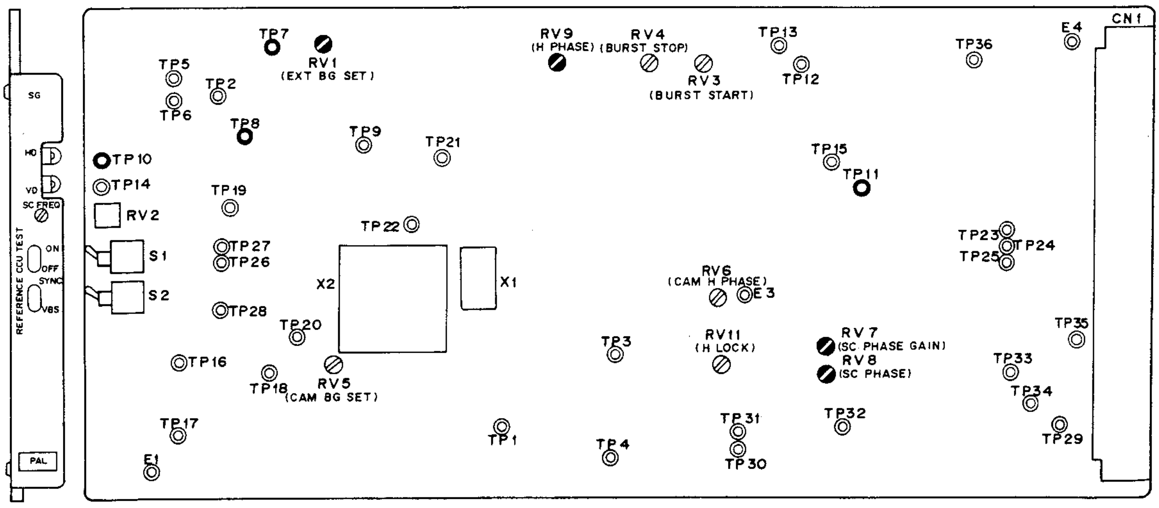


b) SC PHASE ADJUSTMENT

Preparation : ⊘RV8→mechanical center
PHASE/CONTROL PANEL (BKP-3601)→ON
Measuring : Oscilloscope
Test Point : TP33
Trigger : TP10 (HD)
Adj. Point : ⊘RV7

1. Adjust the ⊘RV7 so that the SC phase can be shifted 0° to 98±2° when the SC phase control knob is turned.

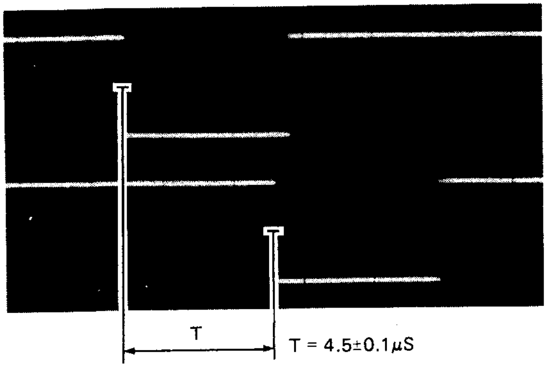



SG
HD
VD
SC FREQ
REFERENCE CCU TEST
ON
OFF
SYNC
VBS
PAL
TP7
RV1
(EXT BG SET)
TP5
TP2
TP6
TP8
TP9
TP21
TP10
TP14
RV2
TP19
S1
S2
TP27
TP26
TP28
TP22
X2
X1
TP20
TP16
TP18
RV5
(CAM BG SET)
TP17
E1
TP1
RV9
(H PHASE)
RV4
(BURST STOP)
RV3
(BURST START)
TP13
TP12
TP15
TP11
RV6
(CAM H PHASE)
E3
TP3
RV11
(H LOCK)
TP4
TP31
TP30
RV7
(SC PHASE GAIN)
RV8
(SC PHASE)
TP32
TP36
E4
CN1
TP23
TP24
TP25
TP35
TP33
TP34
TP29

SG-9A board (component side)

c) H PHASE ADJUSTMENT

Preparation : PHASE/CONTROL PANEL (BKP-3601)→ON
H PHASE control knob→fully clockwise ↻
Measuring : Oscilloscope
Test Point : CH1→TP11
CH2→TP7
Trigger : CH1
Adj. Point : ⊘ RV9
Spec. : T=4.5±0.1 μS



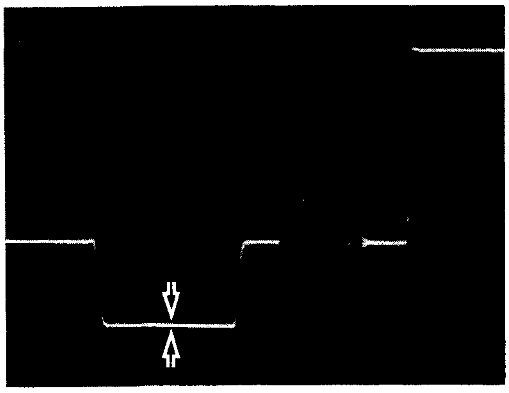
T = 4.5±0.1μS

5-4. EN-31A BOARD ADJUSTMENT

5-4-1. Carrier Balance Adjustment

Preparation : BARS/CONTROL PANEL (BKP-3601)→ON
Measuring : WFM
Adj. Point : ⊘ RV30(V), ⊘ RV35(U)

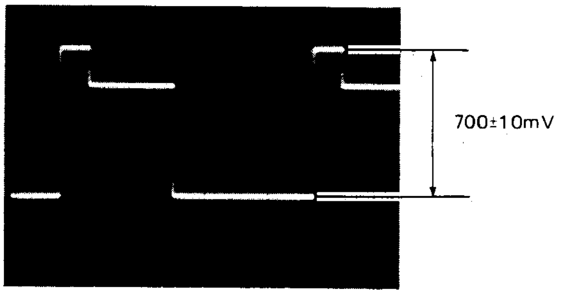
1. Adjust the ⊘RV30(V) and ⊘RV35(U) so that the carrier leakage on the SYNC Signal is minimized.



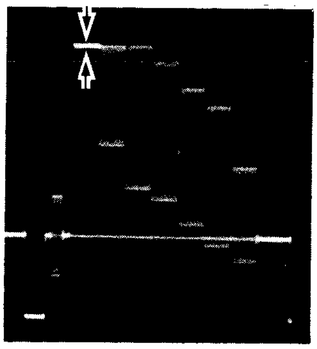
5-4-2. Color Bar Level Adjustment

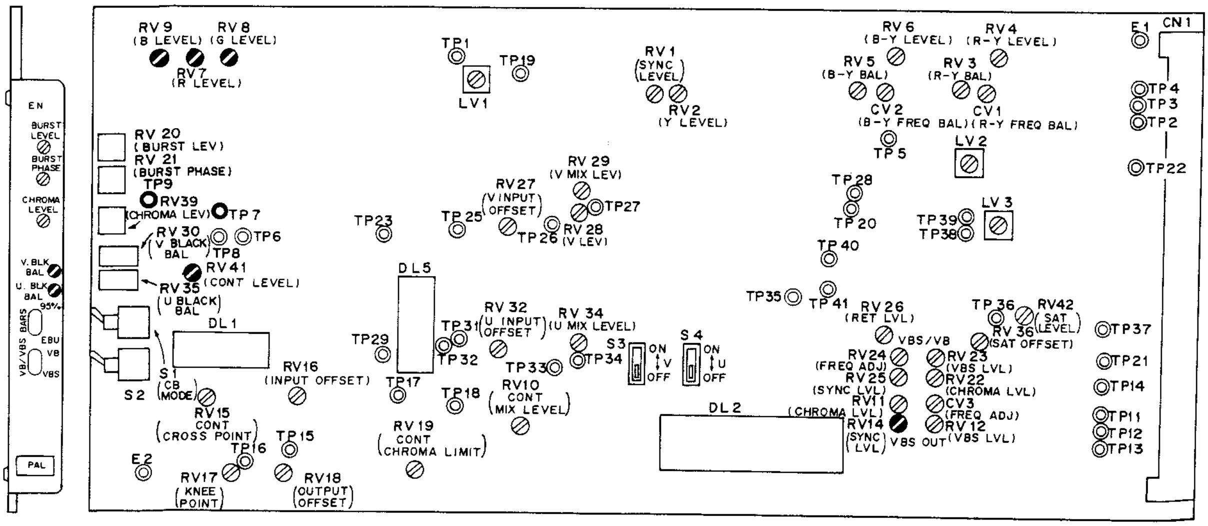
Preparation : BARS/CONTROL PANEL (BKP-3601)→ON
Measuring : Oscilloscope
WFM
Test Point : TP7
Trigger : TP10(HD)/SG-9A board
Adj. Point : ⊘RV7(R), ⊘RV8(G), ⊘RV9(B)

1. Adjust ⊘RV8 so that the signal level at TP7 is 700±10 mV.



2. Adjust ⊘RV7 and RV9 so that the carrier leakage on the white peak is minimized on WFM.



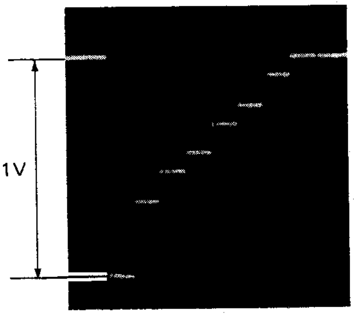

RV9 (B LEVEL)
RV8 (G LEVEL)
RV7 (R LEVEL)
TP1
TP19
LV1
RV1 (SYNC LEVEL)
RV2 (Y LEVEL)
RV6 (B-Y LEVEL)
RV4 (R-Y LEVEL)
RV5 (B-Y BAL)
RV3 (R-Y BAL)
CV2 (B-Y FREQ BAL)
CV1 (R-Y FREQ BAL)
TP5
LV2
E1
CN1
TP4
TP3
TP2
TP22
EN
BURST LEVEL
BURST PHASE
CHROMA LEVEL
V. BLK BAL
U. BLK BAL
95%
BARS
EBU
VB/VBS
VB
VBS
PAL
RV 20 (BURST LEV)
RV 21 (BURST PHASE)
TP9
RV39 (CHROMA LEV)
TP 7
RV 30 (V BLACK BAL)
TP8
TP6
RV41 (CONT LEVEL)
RV 35 (U BLACK BAL)
DL1
S1 (CB MODE)
S2
RV15 (CONT CROSS POINT)
TP16
TP15
E2
RV17 (KNEE POINT)
RV18 (OUTPUT OFFSET)
RV16 (INPUT OFFSET)
TP23
TP29
DL5
TP17
RV19 (CONT CHROMA LIMIT)
TP 25
RV27 (V INPUT OFFSET)
RV 29 (V MIX LEV)
TP27
TP 26
RV 28 (V LEV)
RV 32 (U INPUT OFFSET)
RV 34 (U MIX LEVEL)
TP31
TP32
TP33
TP34
TP18
RV10 (CONT MIX LEVEL)
S3
ON
V
OFF
S 4
ON
U
OFF
TP28
TP 20
TP 40
TP39
TP38
LV 3
TP35
TP 41
RV 26 (RET LVL)
VBS/VB
TP 36
RV42 (SAT LEVEL)
RV 36 (SAT OFFSET)
RV24 (FREQ ADJ)
RV 25 (SYNC LVL)
RV11 (CHROMA LVL)
RV14 (SYNC LVL)
VBS OUT
RV 23 (VBS LVL)
RV22 (CHROMA LVL)
CV3 (FREQ ADJ)
RV 12 (VBS LVL)
DL 2
TP37
TP21
TP14
TP11
TP12
TP13

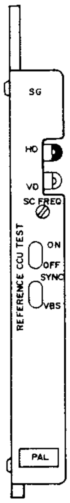
EN-31A board (component side)

5-4-3. EN Y Level Adjustment

Preparation : BARS/CONTROL PANEL (BKP-3601)→ON
Measuring : Oscilloscope
Test Point : TP9
Trigger : TP10(HD)/SG-9A board
Adj. Point : ⊘RV41

1. Adjust ⊘RV41 so that the white peak level is 3.0±0.1V.



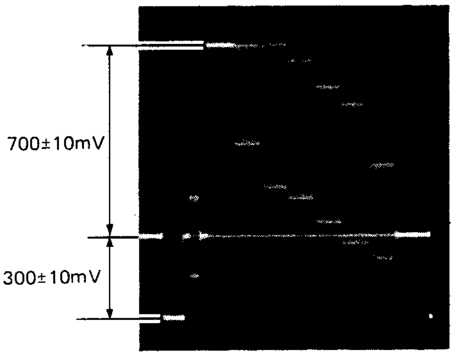

SG
HD
VD
SC FREQ
REFERENCE CCU TEST
ON
OFF
SYNC
VBS
PAL

SG-9A board
(Panel side)

5-4-4. VBS Y Level Adjustment

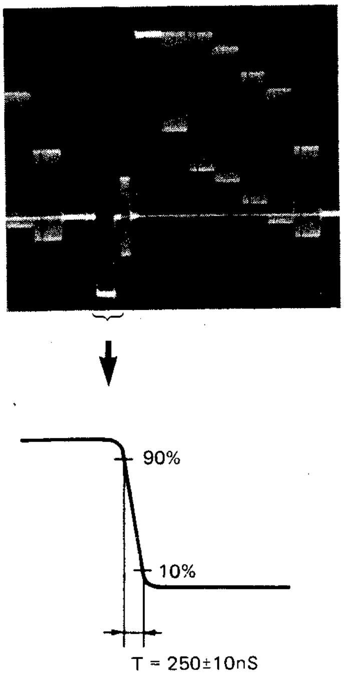
Preparation : BARS/CONTROL PANEL (BKP-3601)→ON
Measuring : WFM
Adj. Point : ⊘RV12, ⊘RV14,

1. Adjust ⊘ RV12 for level A is 700±10 mV
2. Adjust ⊘ RV14 for SYNC level is 300±10 mV.



5-4-5. VBS SYNC Phase Adjustment

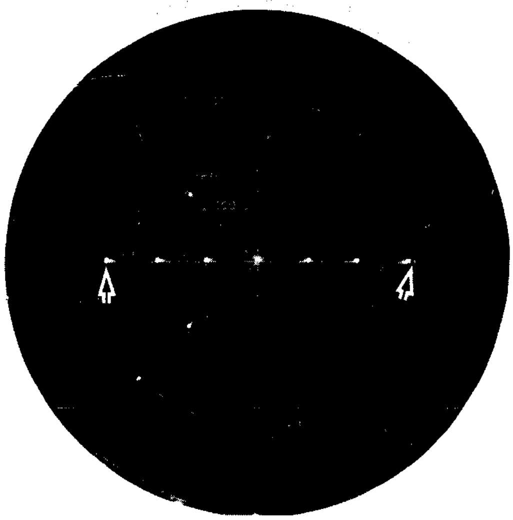
Preparation : BARS /CONTROL PANEL (BKP-3601)→ON
Measuring : Oscilloscope
Test Point : TP11
Adj. Point : ⊘ LV2
Spec. : T=250±10 nS

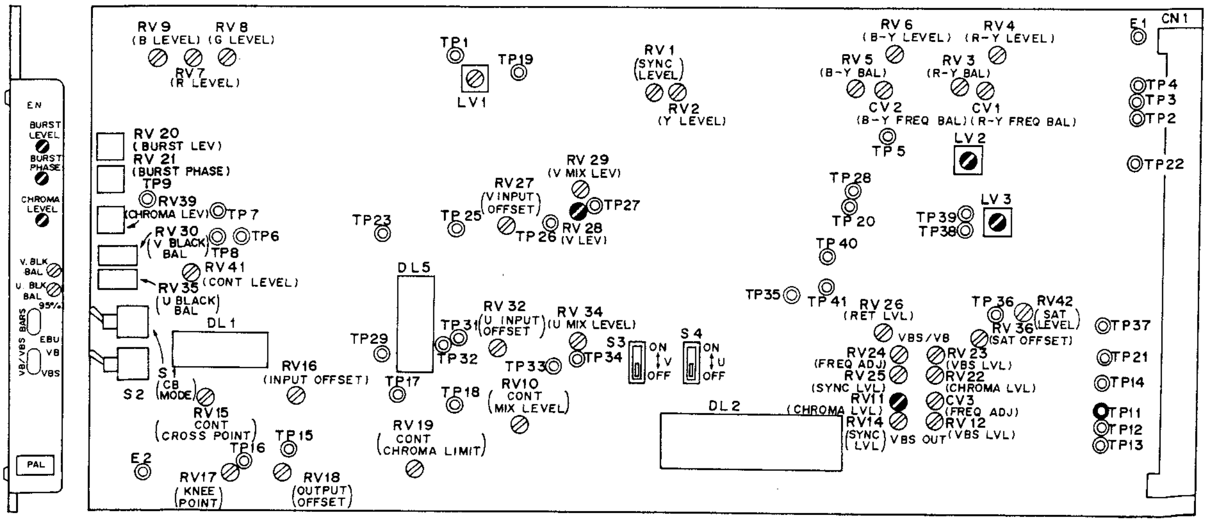


5-4-6. Color Bar Adjustment

Preparation : BARS /CONTROL PANEL (BKP-3601)→ON
⊘ RV39→mechanical center
S3(I)→OFF
Measuring : Vectorscope
Adj. Point : ⊘RV11, ⊘RV20, ⊘RV21, ⊘RV28, ⊘ LV3

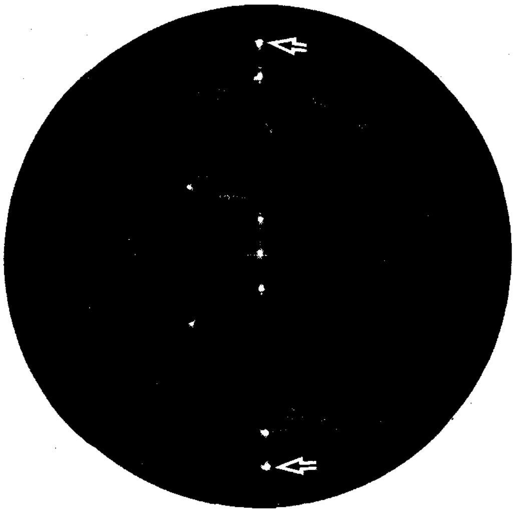
1. Adjust the PHASE control of the vectorscope so that the U signal is overlapped with U axis on the vectorscope.
2. Adjust ⊘ RV11 so that the beam spots at both ends of U signal are overlapped with the scale of vectorscope.



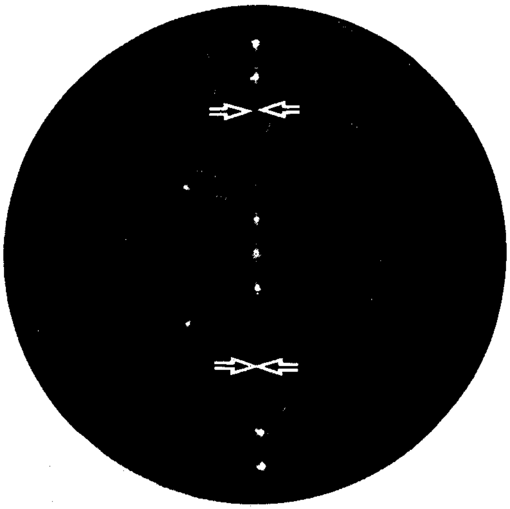

EN
BURST LEVEL
BURST PHASE
CHROMA LEVEL
V. BLK BAL
U. BLK BAL
95%
BARS
EBU
VB/VBS
VB
VBS
PAL
RV9 (B LEVEL)
RV8 (G LEVEL)
RV7 (R LEVEL)
TP1
TP19
LV1
RV1 (SYNC LEVEL)
RV2 (Y LEVEL)
RV6 (B-Y LEVEL)
RV4 (R-Y LEVEL)
RV5 (B-Y BAL)
RV3 (R-Y BAL)
CV2 (B-Y FREQ BAL)
CV1 (R-Y FREQ BAL)
E1
CN1
TP4
TP3
TP2
TP5
LV2
TP22
RV 20 (BURST LEV)
RV 21 (BURST PHASE)
TP9
RV39 (CHROMA LEV)
TP7
RV 30 (V BLACK BAL)
TP8
TP6
RV41 (CONT LEVEL)
RV35 (U BLACK BAL)
DL1
S1 (CB MODE)
S2
RV15 (CONT CROSS POINT)
TP15
TP16
E2
RV17 (KNEE POINT)
RV18 (OUTPUT OFFSET)
RV16 (INPUT OFFSET)
TP23
TP29
TP17
DL5
TP25
RV27 (V INPUT OFFSET)
TP26
RV29 (V MIX LEV)
TP27
RV 28 (V LEV)
TP31
TP32
RV 32 (U INPUT OFFSET)
RV 34 (U MIX LEVEL)
TP18
RV10 (CONT MIX LEVEL)
RV19 (CONT CHROMA LIMIT)
TP33
TP34
S3
ON V OFF
S4
ON U OFF
DL2
TP28
TP20
TP40
TP39
TP38
LV3
TP35
TP41
RV 26 (RET LVL)
VBS/VB
TP36
RV42 (SAT LEVEL)
RV 36 (SAT OFFSET)
RV24 (FREQ ADJ)
RV25 (SYNC LVL)
RV11 (CHROMA LVL)
RV14 (SYNC LVL)
VBS OUT
RV23 (VBS LVL)
RV22 (CHROMA LVL)
CV3 (FREQ ADJ)
RV12 (VBS LVL)
TP37
TP21
TP14
TP11
TP12
TP13

EN-31A board (component side)

3. S4(U)→OFF
   S3(V)→ON
4. Adjust the PHASE control of the vectorscope so that the V signal is overlapped with V axis of vectorscope.
5. Adjust ⊘ RV28 so that the beam spots at both ends of V signal are overlapped with the scale of vectorscope.

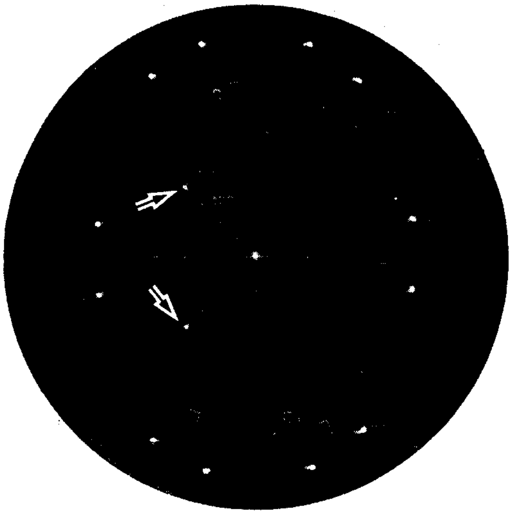


6. S3(V)→OFF
   S4(U)→ON
7. Adjust the PHASE control of the vectorscope so that the U signal is overlapped with U axis on vectorscope.
8. S3(V)→ON
   S4(U)→OFF
9. Adjust ⊘ LV3 so that the V signal is overlapped with V axis.

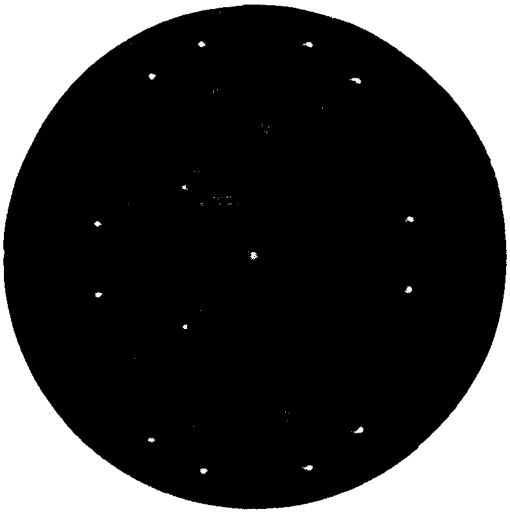


10. Repeat Step 6. through Step 9 untill the U and V signals are crossed at right angle.

11. S4(U)→ON
12. Adjust ⊘ RV20 and ⊘ RV21 so that the BURST signal is overlapped with 75% scale.

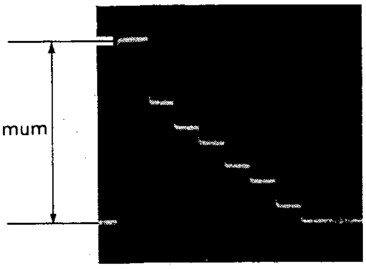


13. Confirm that the all bright spots of color bar signal are located in the specified scale on the WFM.
    If not, readjust this adjustment.



5-4-7. Return Video Level Adjustment

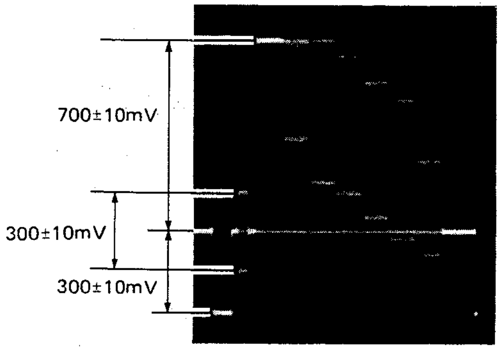
Preparation : BARS /CONTROL PANEL (BKP-3601)→ON
Measuring : Oscilloscope
Test Point : TP22
Adj. Point : ⊘ RV26
Trigger : TP10(HD)/SG-9A board
Spec. : Maximum



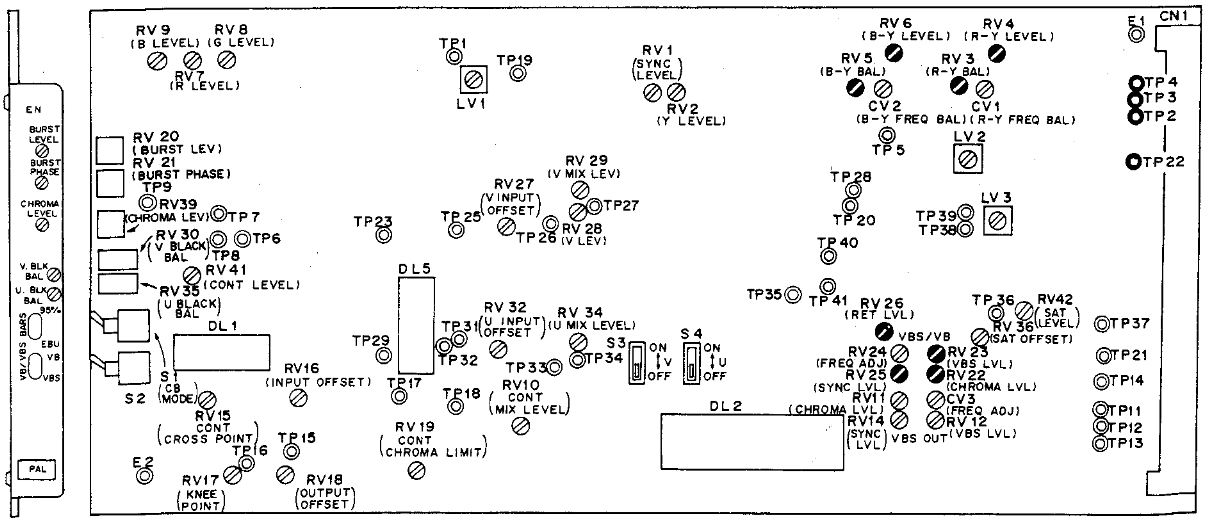
5-4-8. VBS/VB Level Adjustment

Preparation : Connect the WFM to VBS4/VB terminal at the rear panel of CCU.
BARS /CONTROL PANEL (BKP-3601)→ON
Measuring : WFM
Adj. point : ⊘ RV22, ⊘ RV23, ⊘ RV25

1. Adjust ⊘ RV23 so that the white peak level is 700±10 mV.
2. Adjust ⊘ RV22 so that the BURST level is 300±10 mV.
3. Adjust ⊘ RV25 so that the SYNC level is 300±10 mV.



Note: After this adjustment is completed, connect the WFM to VBS1 terminal.


EN
BURST LEVEL
BURST PHASE
CHROMA LEVEL
V. BLK BAL
U. BLK BAL
95%
BARS
EBU
VB/VBS
VB
VBS
PAL
RV9 (B LEVEL)
RV8 (G LEVEL)
RV7 (R LEVEL)
TP1
TP19
LV1
RV1 (SYNC LEVEL)
RV2 (Y LEVEL)
RV6 (B-Y LEVEL)
RV4 (R-Y LEVEL)
RV5 (B-Y BAL)
RV3 (R-Y BAL)
CV2 (B-Y FREQ BAL)
CV1 (R-Y FREQ BAL)
TP5
LV2
E1
CN1
TP4
TP3
TP2
TP22
RV20 (BURST LEV)
RV21 (BURST PHASE)
TP9
RV39 (CHROMA LEV)
TP7
RV30 (V BLACK BAL)
TP6
TP8
RV41 (CONT LEVEL)
RV35 (U BLACK BAL)
DL1
S1 (CB MODE)
S2
RV15 (CONT CROSS POINT)
TP16
TP15
E2
RV17 (KNEE POINT)
RV18 (OUTPUT OFFSET)
RV16 (INPUT OFFSET)
TP23
TP25
RV27 (V INPUT OFFSET)
RV29 (V MIX LEV)
TP27
TP26
RV28 (V LEV)
DL5
TP29
TP17
TP31
TP32
RV32 (U INPUT OFFSET)
RV34 (U MIX LEVEL)
TP33
TP34
TP18
RV10 (CONT MIX LEVEL)
RV19 (CONT CHROMA LIMIT)
S3
ON V OFF
S4
ON U OFF
DL2
TP28
TP20
TP40
TP39
TP38
LV3
TP35
TP41
RV26 (RET LVL)
VBS/VB
TP36
RV42 (SAT LEVEL)
RV36 (SAT OFFSET)
RV24 (FREQ ADJ)
RV23 (VBS LVL)
RV25 (SYNC LVL)
RV22 (CHROMA LVL)
RV11 (CHROMA LVL)
CV3 (FREQ ADJ)
RV14 (SYNC LVL)
RV12 (VBS LVL)
VBS OUT
TP37
TP21
TP14
TP11
TP12
TP13

EN-31A board (component side)

5-4-9. Betacam Output Adjustment

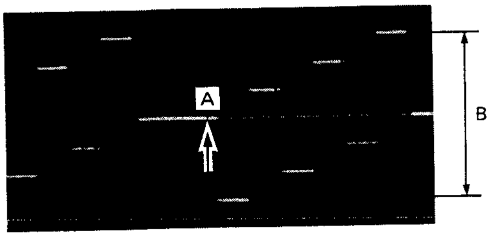
Note: If the output terminal at rear panel of CCU is not terminated by 75-ohm terminater, waveform level is doubled.

Preparation : BARS/CONTROL PANEL (BKP-3601)→ON
Measuring : Oscilloscope
Trigger : TP10(HD)/SG-9A board

a) B-Y ADJUSTMENT

Test Point : TP3
Adj. point : ⊘RV5, ⊘RV6

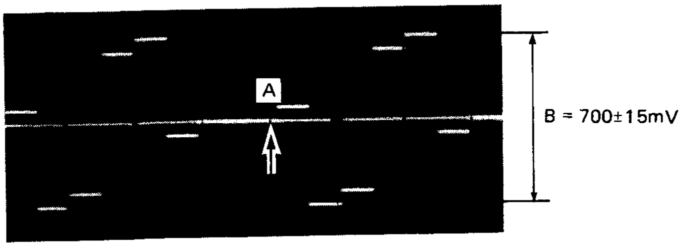
1. Adjust ⊘ RV5 so that the portion A is flat.
2. Adjust ⊘ RV6 so that the level B is 700±15 mVp-p.
3. Repeat Step 1 and Step 2 until the both specifications are satisfied.



b) R-Y ADJUSTMENT

Test Point : TP4
Adj. point : ⊘RV3, ⊘RV4

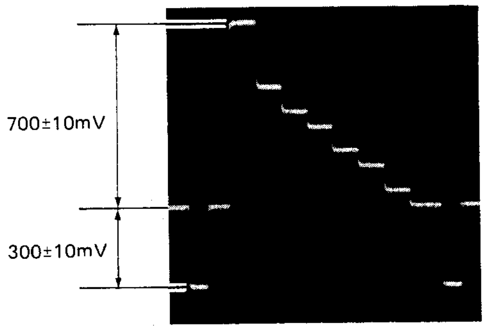
1. Adjust ⊘ RV3 so that the portion A is flat.
2. Adjust ⊘ RV4 so that the level B is 700±15 mVp-p.
3. Repeat Step 1 and Step 2 until the both specifications are satisfied.



c) Y ADJUSTMENT

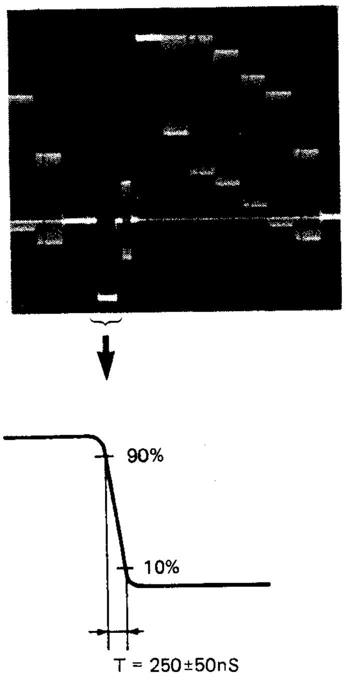
Test Point : TP2
Adj. point : ⊘RV1, ⊘RV2,

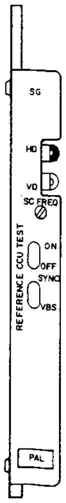
1. Adjust ⊘ RV1 for SYNC level is 300±10 mV.
2. Adjust ⊘ RV2 for white peak level is 700±10 mV.



d) SYNC PHASE ADJUSTMENT

Test Point : TP2
Adj. Point : ⊘ LV1
Spec. : T=250±50 nS





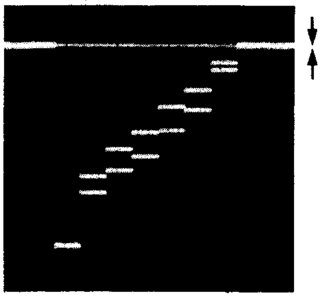
SG-9A board
(Panel side)

5-4-10. Contrast Adjustment

Preparation : S1(BARS)/EN-31A board→EBU
BARS/CONTROL PANEL (BKP-3601)→ON
Measuring : Oscilloscope (ALT mode)
Test Point : CH1→TP15
CH2→TP16

a) INPUT OFFSET ADJUSTMENT

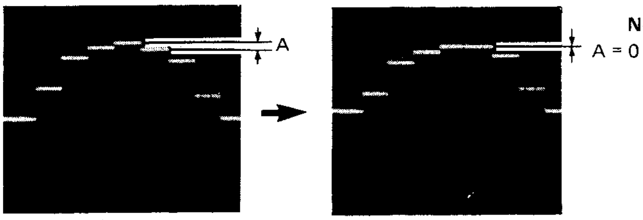
1. Adjust ⊘ RV16 so that the black level at CH1 and CH2 are equal.



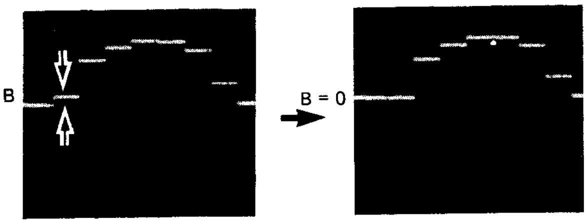
b) CROSS POINT and KNEE POINT ADJUSTMENTS

Preparation : ⊘ RV15→mechanical center.
Invert CH2 and set the oscilloscope to ADD mode.

1. Adjust ⊘ RV17 so that the level A is zero.



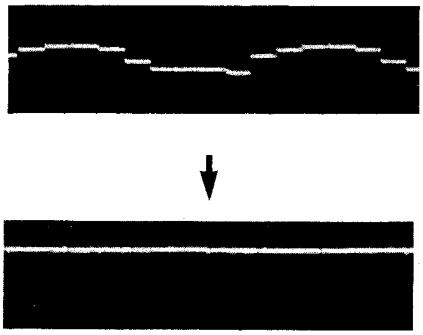
2. Adjust ⊘ RV15 so that the level B is zero.



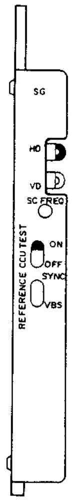
c) OUTPUT OFFSET ADJUSTMENT

Preparation : S1(CCU TEST)/SG-9A board→ON
⊘ RV19→fully clockwise ↻
BARS/CONTROL PANEL (BKP-3601)→OFF
CONTRAST/CONTROL PANEL→ON
Test Point : TP17
Adj. Point : ⊘ RV18

1. Turn the CONTRAST control knob on the control panel BKP-3601 fully counterclockwise. ("0" is indicated on LCD of BKP-3601.)
2. Adjust ⊘ RV18 so that the waveform signal at TP17 is flat.



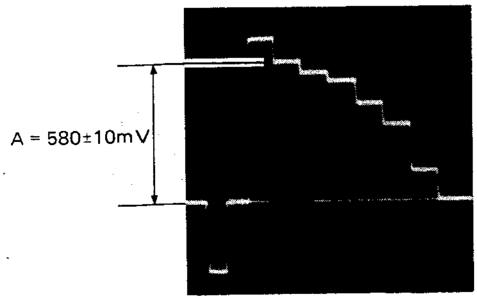
Note: After this adjustment is completed, carry out 5-4-16. CHROMA LIMIT ADJUSTMENT.

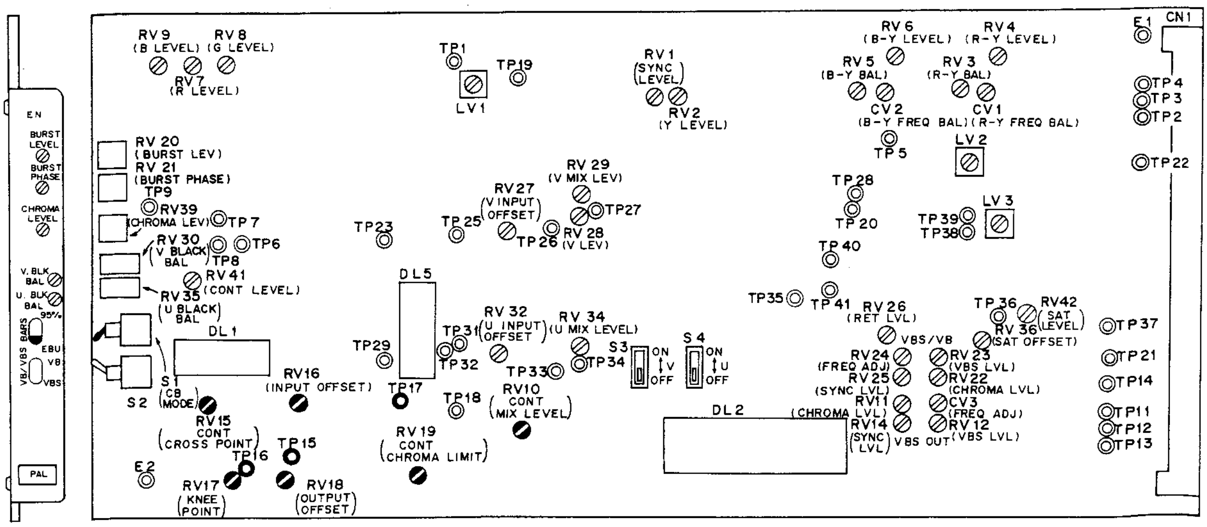


SG-9A board
(Panel side)

5-4-11. Contrast Mix Level Adjustment

Preparation : S1 (CCU TEST)/SG-9A board→ON
BARS/CONTROL PANEL (BKP-3601)→OFF
CONTRAST/CONTROL PANEL (BKP-3601)→ON
Turn the CONTRAST control knob on the BKP-3601 fully clockwise. ("+99" is indicated on LCD of BKP-3601)
Measuring : WFM (Y mode)
Adj. Point : RV10
Spec. : A=580±10 mV



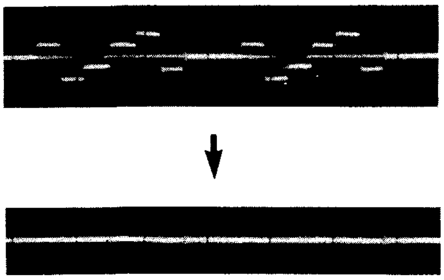

EN
BURST LEVEL
BURST PHASE
CHROMA LEVEL
V. BLK BAL
U. BLK BAL
95%
BARS
EBU
VB/VBS
VB
VBS
PAL
RV9 (B LEVEL)
RV8 (G LEVEL)
RV7 (R LEVEL)
TP1
TP19
LV1
RV1 (SYNC LEVEL)
RV2 (Y LEVEL)
RV6 (B-Y LEVEL)
RV4 (R-Y LEVEL)
RV5 (B-Y BAL)
RV3 (R-Y BAL)
CV2 (B-Y FREQ BAL)
CV1 (R-Y FREQ BAL)
TP5
LV2
E1
CN1
TP4
TP3
TP2
TP22
RV 20 (BURST LEV)
RV 21 (BURST PHASE)
TP9
RV39 (CHROMA LEV)
TP 7
RV 30 (V BLACK BAL)
TP6
TP8
RV 41 (CONT LEVEL)
RV 35 (U BLACK BAL)
DL 1
S1 (CB MODE)
S2
RV15 (CONT CROSS POINT)
TP15
TP16
E2
RV17 (KNEE POINT)
RV18 (OUTPUT OFFSET)
RV16 (INPUT OFFSET)
TP23
DL5
TP29
TP17
RV 19 (CONT CHROMA LIMIT)
RV 29 (V MIX LEV)
RV27 (V INPUT OFFSET)
TP 25
TP27
TP 26
RV 28 (V LEV)
RV 32 (U INPUT OFFSET)
RV 34 (U MIX LEVEL)
TP31
TP32
TP33
TP34
TP18
RV10 (CONT MIX LEVEL)
S3
ON
V
OFF
S4
ON
U
OFF
DL 2
TP 28
TP 20
TP 40
TP39
TP38
LV 3
TP35
TP 41
RV 26 (RET LVL)
VBS/VB
TP 36
RV42 (SAT LEVEL)
RV 36 (SAT OFFSET)
RV24 (FREQ ADJ)
RV 23 (VBS LVL)
RV 25 (SYNC LVL)
RV22 (CHROMA LVL)
RV11 (CHROMA LVL)
CV3 (FREQ ADJ)
RV14 (SYNC LVL)
VBS OUT
RV 12 (VBS LVL)
TP 37
TP 21
TP14
TP11
TP12
TP13

EN-31A board (component side)

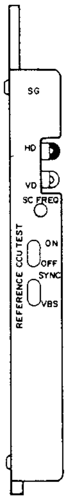
5-4-12. Saturation Control Adjustment

Preparation : S1 (CCU TEST)/SG-9A board→ON
BARS/CONTROL PANEL (BKP-3601)→OFF
CONTRAST/CONTROL PANEL→OFF
SATURATION/CONTROL PANEL→ON
Adjust the SATURATION control knob on the BKP-3601 so that the LCD of BKP-3601 indicates "SATURATION 0"
Measuring : Oscilloscope
Test Point : TP26
Trigger : TP10(HD)/SG-9A board
Adj. Point : ⊘RV36

1. Adjust ⊘RV36 so that the waveform signal at TP26 is flat.



Note: After this adjustment is completed, set the SATURATION sw to OFF.

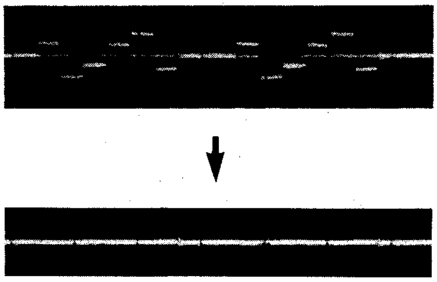


SG-9A board
(Panel side)

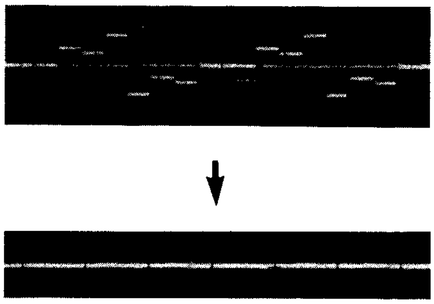
5-4-13. V, U Input Offset Adjustment

Preparation : S1 (CCU TEST)/SG-9A board→ON
BARS/CONTROL PANEL (BKP-3601)→OFF
CONTRAST/CONTROL PANEL (BKP-3601)→ON
Turn the CONTRAST control knob on the BKP-3601 fully counterclockwise. ("0" is indicated on LCD of BKP-3601.)
Measuring : Oscilloscope
Test Point : TP26, TP33
Trigger : TP10(HD)/SG-9A board
Adj. Point : ⊘RV27, ⊘RV32

1. Adjust ⊘RV27 so that the waveform signal at TP26 is flat.



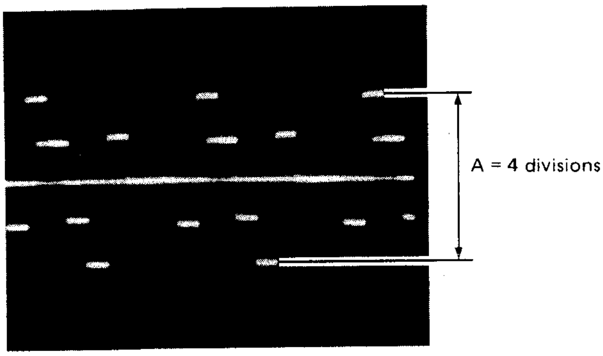
2. Adjust ⊘RV32 so that the waveform signal at TP33 is flat.



5-4-14. V Mix Level Adjustment

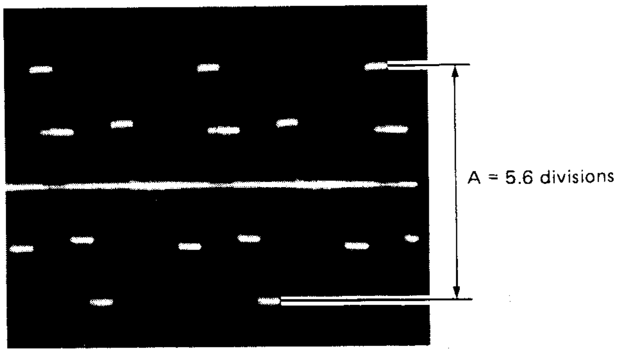
Preparation : S1 (CCU TEST)/SG-9A board→ON
BARS/CONTROL PANEL (BKP-3601)→OFF
CONTRAST/CONTROL PANEL (BKP-3601)→ON
Turn the CONTRAST control knob on the BKP-3601 fully counterclockwise.
("0" is indicated on LCD of BKP-3601.)
Measuring : Oscilloscope
Test Point : TP27
Trigger : TP10(HD)/SG-9A board
Adj. Point : ⊘RV29

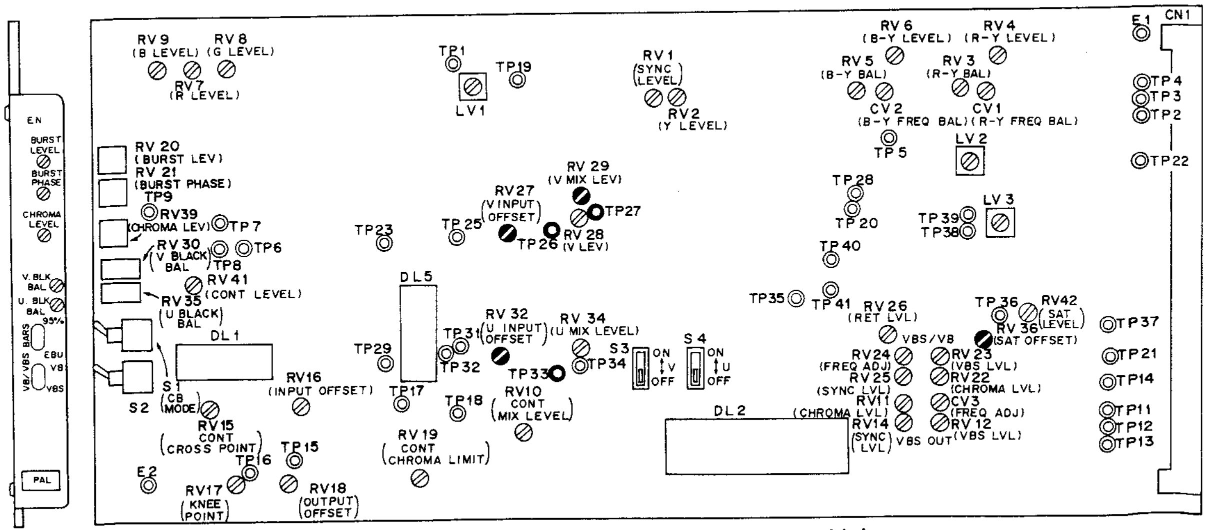
1. Turn the gain control knob of the oscilloscope so that the peak level A indicates 4 divisions on the scale of the oscilloscope.



2. Turn the CONTRAST knob on the BKP-3601 fully clockwise.

3. Adjust ⊘RV29 so that the peak level A indicates 5.6 divisions on the scale.



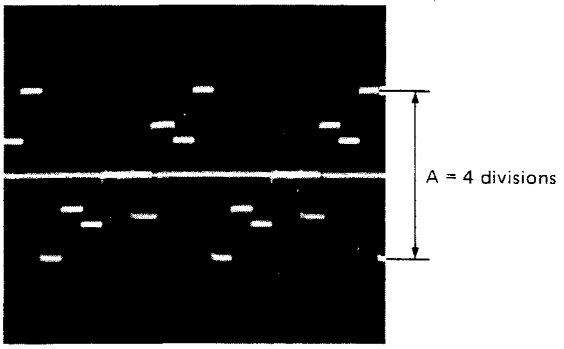

EN
BURST LEVEL
BURST PHASE
CHROMA LEVEL
V. BLK BAL
U. BLK BAL
95%
BARS
EBU
VB/VBS
VB
VBS
PAL
RV9 (B LEVEL)
RV8 (G LEVEL)
RV7 (R LEVEL)
TP1
TP19
LV1
RV1 (SYNC LEVEL)
RV2 (Y LEVEL)
RV6 (B-Y LEVEL)
RV4 (R-Y LEVEL)
RV5 (B-Y BAL)
RV3 (R-Y BAL)
CV2 (B-Y FREQ BAL)
CV1 (R-Y FREQ BAL)
TP5
LV2
E1
CN1
TP4
TP3
TP2
TP22
RV20 (BURST LEV)
RV21 (BURST PHASE)
TP9
RV39 (CHROMA LEV)
TP7
RV30 (V BLACK BAL)
TP6
TP8
RV41 (CONT LEVEL)
RV35 (U BLACK BAL)
DL1
S1 (CB MODE)
S2
RV15 (CONT CROSS POINT)
TP16
TP15
E2
RV17 (KNEE POINT)
RV18 (OUTPUT OFFSET)
RV16 (INPUT OFFSET)
TP23
TP29
DL5
TP17
TP18
RV19 (CONT CHROMA LIMIT)
RV29 (V MIX LEV)
RV27 (V INPUT OFFSET)
TP25
TP26
RV28 (V LEV)
TP27
RV32 (U INPUT OFFSET)
RV34 (U MIX LEVEL)
TP31
TP32
TP33
TP34
RV10 (CONT MIX LEVEL)
S3
ON
V
OFF
S4
ON
U
OFF
DL2
TP28
TP20
TP40
TP39
TP38
LV3
TP35
TP41
RV26 (RET LVL)
VBS/VB
TP36
RV42 (SAT LEVEL)
RV36 (SAT OFFSET)
RV24 (FREQ ADJ)
RV25 (SYNC LVL)
RV11 (CHROMA LVL)
RV14 (SYNC LVL)
VBS OUT
RV23 (VBS LVL)
RV22 (CHROMA LVL)
CV3 (FREQ ADJ)
RV12 (VBS LVL)
TP37
TP21
TP14
TP11
TP12
TP13

EN-31A board (component side)

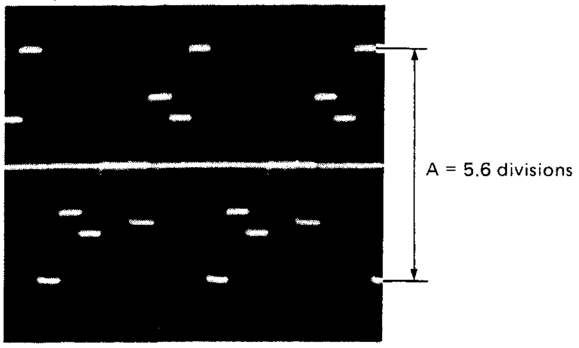
5-4-15. U Mix Level Adjustment

Preparation : S1 (CCU TEST)/SG-9A board→ON
BARS/CONTROL PANEL (BKP-3601)→OFF
CONTRAST/CONTROL PANEL
(BKP-3601)→ON
Turn the CONTRAST control knob on the BKP-3601 fully counterclockwise to contrast is minimized. ("0" is indicated on LCD of BKP-3601.)
Measuring : Oscilloscope
Test Point : TP34
Trigger : TP10(HD)/SG-9A board
Adj. Point : ⊘ RV34

1. Turn the gain control knob of the oscilloscope so that the peak level A indicates 4 divisions on the scale on the oscilloscope.



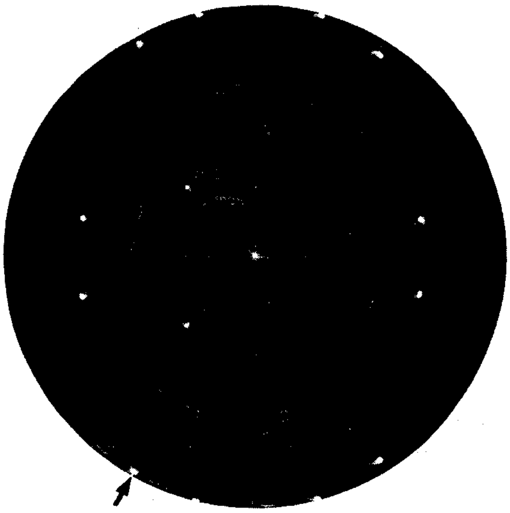
2. Turn the CONTRAST knob on the BKP-3601 fully clockwise.
3. Adjust ⊘ RV34 so that the peak level A indicates 5.6 divisions on the scale.

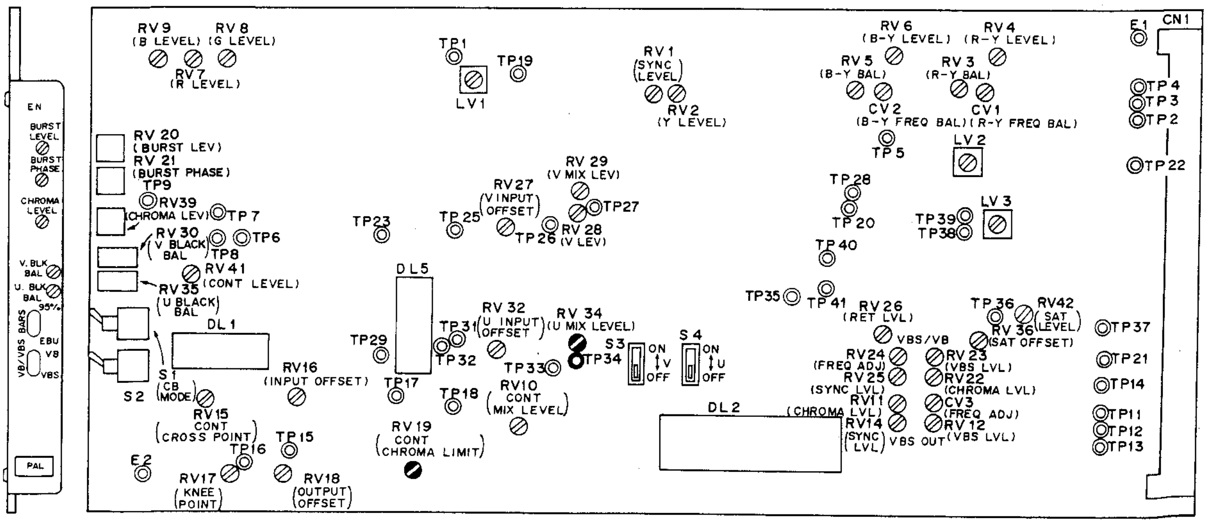


5-4-16. Contrast Chroma Limit Adjustment

Preparation : S1 (CCU TEST)/SG-9A board→ON
BARS /CONTROL PANEL (BKP-3601)→OFF
CONTRAST/CONTROL PANEL
(BKP-3601)→ON
Turn the CONTRAST control knob on the BKP-3601 fully clockwise. ("+99" is indicated on LCD of BKP-3601.)
Measuring : Vectorscope
Adj. Point : ⊘ RV19

1. Adjust ⊘ RV19 so that the beam spot of green is overlapped with outside scale on the vectorscope.



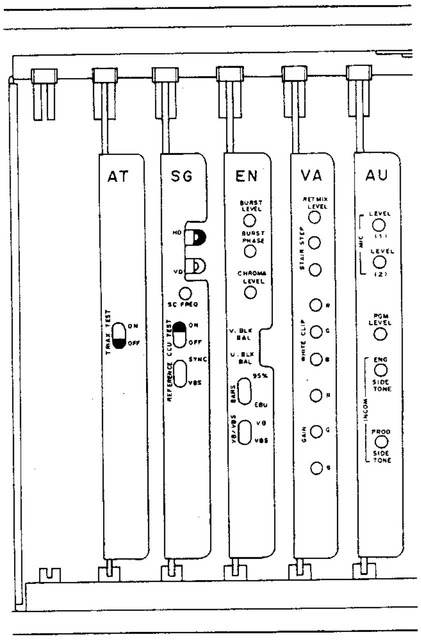


EN-31A board (component side)

5-5. VA-28 BOARD ADJUSTMENT

Note: EN-31A board adjustment should be performed, before VA-28 board adjustment.

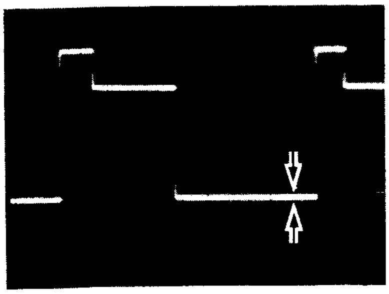
Preparation : S1 (CCU TEST)/SG-9A board→ON
S1 (TRIAX TEST)/AT26 board→OFF
BARS/CONTROL PANEL (BKP-3601)→OFF
EXT. Board : VA-28 board
Trigger : TP10(HD)/SG-9A board

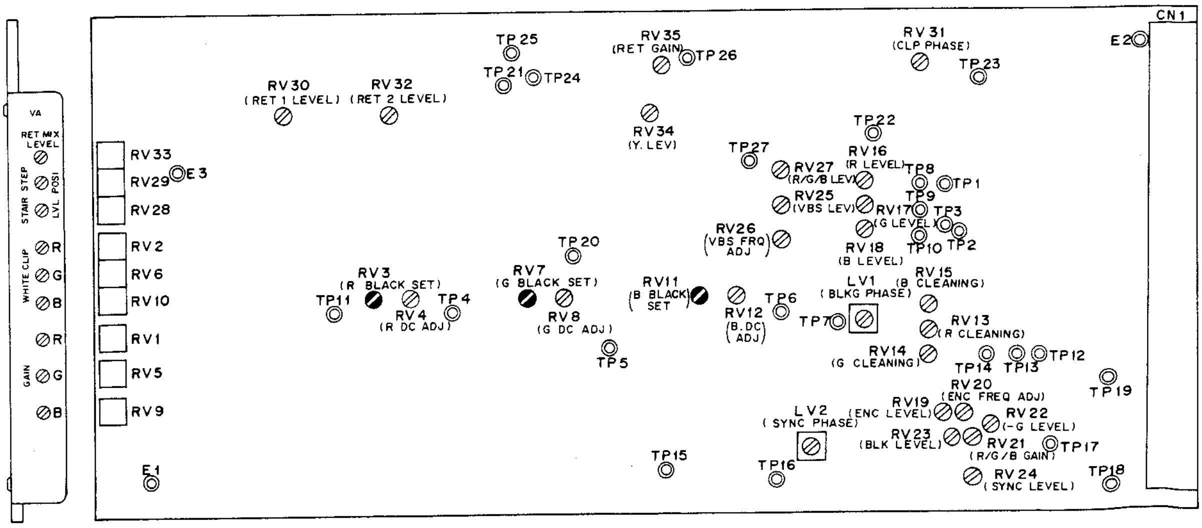

AT
TRIAX TEST
ON
OFF
SG
HD
VD
SC FREQ
REFERENCE
CCU TEST
ON
OFF
SYNC
VBS
EN
BURST LEVEL
BURST PHASE
CHROMA LEVEL
V. BLK BAL
U. BLK BAL
BARS
95%
EBU
VB/VBS
VB
VBS
VA
RET MIX LEVEL
STAIR STEP
WHITE CLIP
R
G
B
GAIN
R
G
B
AU
MIC
LEVEL (1)
LEVEL (2)
PGM LEVEL
INCOM
ENG SIDE TONE
PROD SIDE TONE

5-5-1. Black Set Adjustment

Measuring : Oscilloscope
Test Point : TP12(R)
TP13(G)
TP14(B)
Adj. Point : ⊘RV3(R)
⊘RV7(G)
⊘RV11(B)

1. Adjust ⊘RV3, ⊘RV7 and ⊘RV11 so that the black levels at TP12, TP13 and TP14 are flat, respectively.



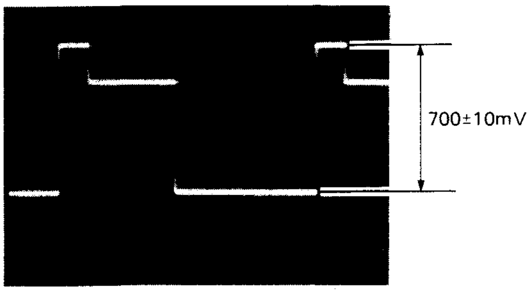

VA
RET MIX LEVEL
STAIR STEP
LVL
POSI
WHITE CLIP
R
G
B
GAIN
R
G
B
RV33
RV29
E3
RV28
RV2
RV6
RV10
RV1
RV5
RV9
E1
RV30
(RET 1 LEVEL)
RV32
(RET 2 LEVEL)
TP25
TP21
TP24
RV35
(RET GAIN)
TP26
RV34
(Y. LEV)
TP20
RV3
(R BLACK SET)
TP11
TP4
RV4
(R DC ADJ)
RV7
(G BLACK SET)
RV8
(G DC ADJ)
TP5
RV11
(B BLACK SET)
RV12
(B.DC ADJ)
TP6
TP7
TP15
TP16
LV2
(SYNC PHASE)
RV26
(VBS FRQ ADJ)
TP27
RV27
(R/G/B LEV)
RV25
(VBS LEV)
RV16
(R LEVEL)
RV17
(G LEVEL)
RV18
(B LEVEL)
TP22
TP8
TP1
TP9
TP3
TP10
TP2
RV31
(CLP PHASE)
TP23
E2
CN1
LV1
(BLKG PHASE)
RV15
(B CLEANING)
RV13
(R CLEANING)
RV14
(G CLEANING)
TP14
TP13
TP12
TP19
RV20
(ENC FREQ ADJ)
RV19
(ENC LEVEL)
RV22
(-G LEVEL)
RV23
(BLK LEVEL)
RV21
(R/G/B GAIN)
TP17
RV24
(SYNC LEVEL)
TP18

VA−28 board (component side)

5-5-2. Gain Adjustment (1)

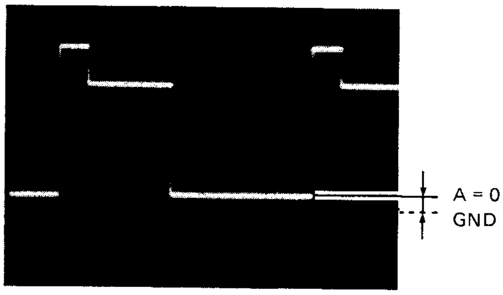
Note: If the output terminal at rear panel of CCU is not terminated by 75-ohm terminater, the signal level is doubled.

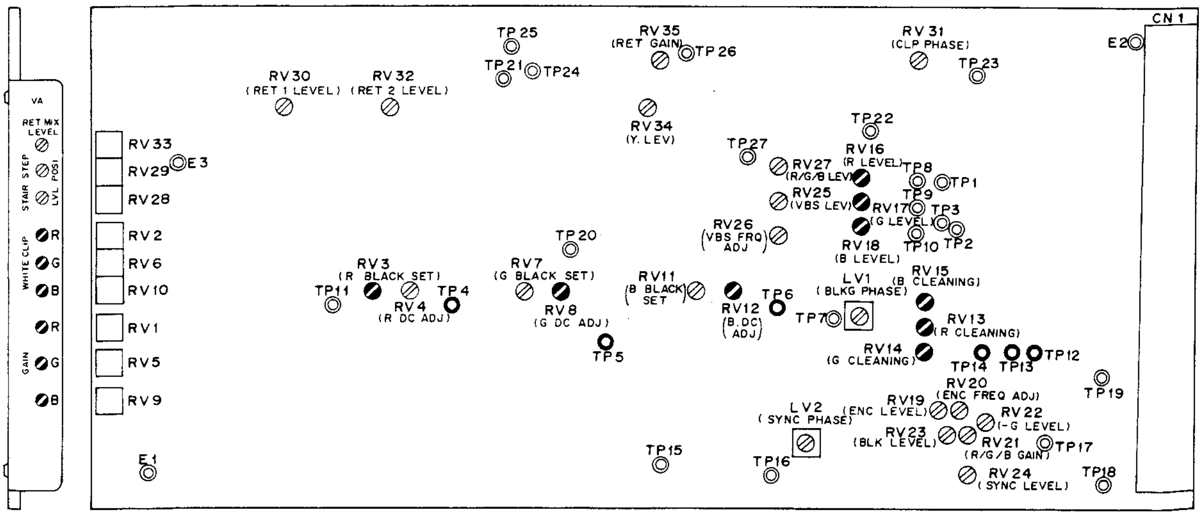
Measuring	: Oscilloscope
Test Point	: TP12(R) TP13(G) TP14(B)
Adj. Point	: ⊘ RV1(R) ⊘ RV5(G) ⊘ RV9(B)
Spec.	: V=700±10 mV



5-5-3. DC Set Adjustment

Measuring	: Oscilloscope
Test Point	: TP12(R) TP13(G) TP14(B)
Adj. Point	: ⊘ RV4(R) ⊘ RV8(G) ⊘ RV12(B)
Spec.	: A=0



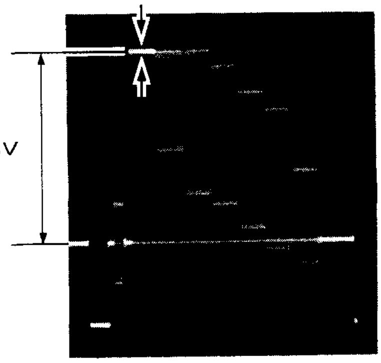

VA
RET MIX LEVEL
STAIR STEP
LVL POSI
WHITE CLIP
R
G
B
GAIN
R
G
B
RV33
RV29
E3
RV28
RV2
RV6
RV10
RV1
RV5
RV9
E1
RV30
(RET 1 LEVEL)
RV32
(RET 2 LEVEL)
TP25
TP21
TP24
RV35
(RET GAIN)
TP26
RV34
(Y. LEV)
RV31
(CLP PHASE)
TP23
E2
CN 1
TP22
TP27
RV16
(R LEVEL)
RV27
(R/G/B LEV)
TP8
TP1
RV25
(VBS LEV)
TP9
RV17
TP3
(G LEVEL)
RV26
(VBS FRQ ADJ)
RV18
(B LEVEL)
TP10
TP2
TP20
RV3
(R BLACK SET)
TP11
TP4
RV4
(R DC ADJ)
RV7
(G BLACK SET)
RV8
(G DC ADJ)
TP5
RV11
(B BLACK SET)
RV12
(B.DC ADJ)
TP6
TP7
LV1
(BLKG PHASE)
RV15
(B CLEANING)
RV13
(R CLEANING)
RV14
(G CLEANING)
TP14
TP13
TP12
TP19
RV20
(ENC FREQ ADJ)
RV19
(ENC LEVEL)
RV22
(-G LEVEL)
LV2
(SYNC PHASE)
RV23
(BLK LEVEL)
RV21
(R/G/B GAIN)
TP17
TP15
TP16
RV24
(SYNC LEVEL)
TP18

VA-28 board (component side)

5-5-4. Gain Adjustment (2)

Measuring : WFM
Adj. Point : ⊘RV16, ⊘RV17, ⊘RV18

1. Adjust ⊘RV16, ⊘RV17 and ⊘RV18 so that the white peak on WFM is 700±10 mV and the carrier leakage is minimized.

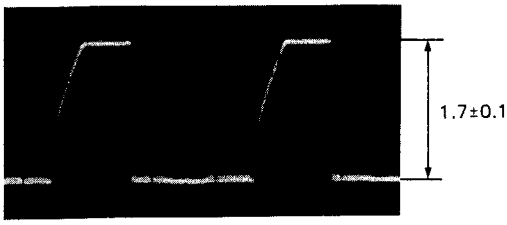


5-5-5. Cleaning and White Clip Adjustment

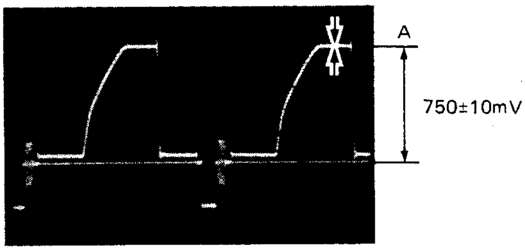
Note: Be sure that the GAIN ADJUSTMENT (1) and (2) are performed before this adjustment.

Preparation : S1 (CCU TEST)/SG-9A board→OFF
TEST/CONTROL PANEL (BKP-3601)→ON
GAIN/CONTROL PANEL→+6 dB
⊘RV1→R.GAIN Fully clockwise ↻
⊘RV5→G.GAIN Fully clockwise ↻
⊘RV9→B.GAIN Fully clockwise ↻
⊘RV2→Fully counterclockwise ↺
⊘RV6→Fully counterclockwise ↺
⊘RV10→Fully counterclockwise ↺
Measuring : Oscilloscope, WFM
Test Point : TP4(R)
TP5(G)
TP6(B)
Adj. Point : ⊘RV2, ⊘RV13 (R)
⊘RV6, ⊘RV14 (G)
⊘RV10, ⊘RV15 (B)

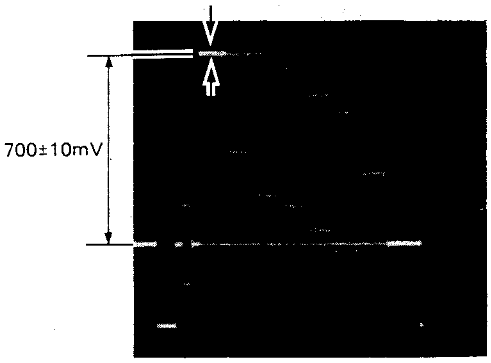
1. Adjust ⊘RV13, ⊘RV14 and ⊘RV15 so that the each signal at TP4, TP5 and TP6 is clipped at 1.7±0.1V.

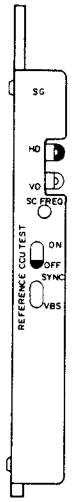


2. Adjust ⊘RV2, ⊘RV6 and ⊘RV10 so that the portion A of waveform on the WFM is 750±10 mV and carrier leakage is minimized.



3. S1(CCU TEST)/SG-9A board→ON
4. Adjust ⊘RV1, ⊘RV5 and ⊘RV9 so that the white peak of waveform on the WFM is 700±10 mV and carrier leakage is minimized.





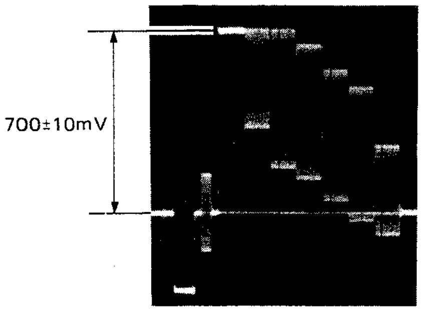
SG-9A board
(Panel side)

5-5-6. WF Output Adjustment

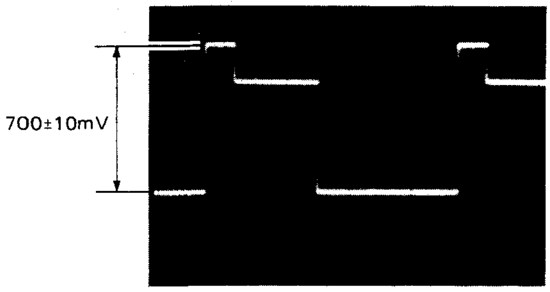
Note: If the output terminal at rear panel of CCU is not terminated by 75-ohm terminater, the signal level is doubled.

Preparation : WAVEFORM /CONTROL PANEL→ENC
BARS /CONTROL PANEL (BKP-3601)→ON
Measuring : Oscilloscope
Test Point : TP19
Adj. Point : ⊘RV25, ⊘RV27

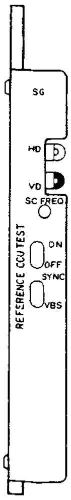
1. Adjust ⊘RV25 so that the white peak level at TP19 is 700±10 mV.



2. WAVEFORM /CONTROL PANEL→G
3. Adjust ⊘RV27 so that the waveform level at TP19 is 700±10 mV.



Note: After this adjustment is completed, be sure set the BARS /CONTROL PANEL to OFF.

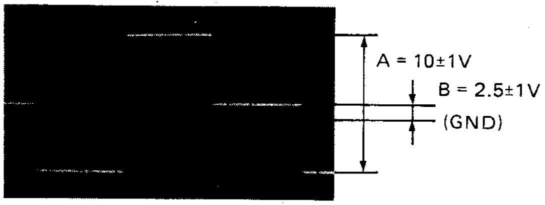


SG-9A board
(Panel side)

5-5-7. Staircase Adjustment

The staircase signal is used for RGB display of the WFM.

Measuring : Oscilloscope
Test Point : TP20
Adj. Point : ⊘RV28, ⊘RV29
Trigger : TP14(VD)/SG-9A board
Spec. : A=10±1V (⊘RV28)
B=2.5±1V (⊘RV29)

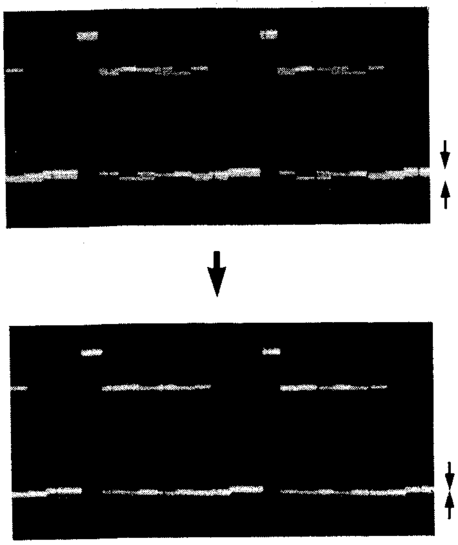


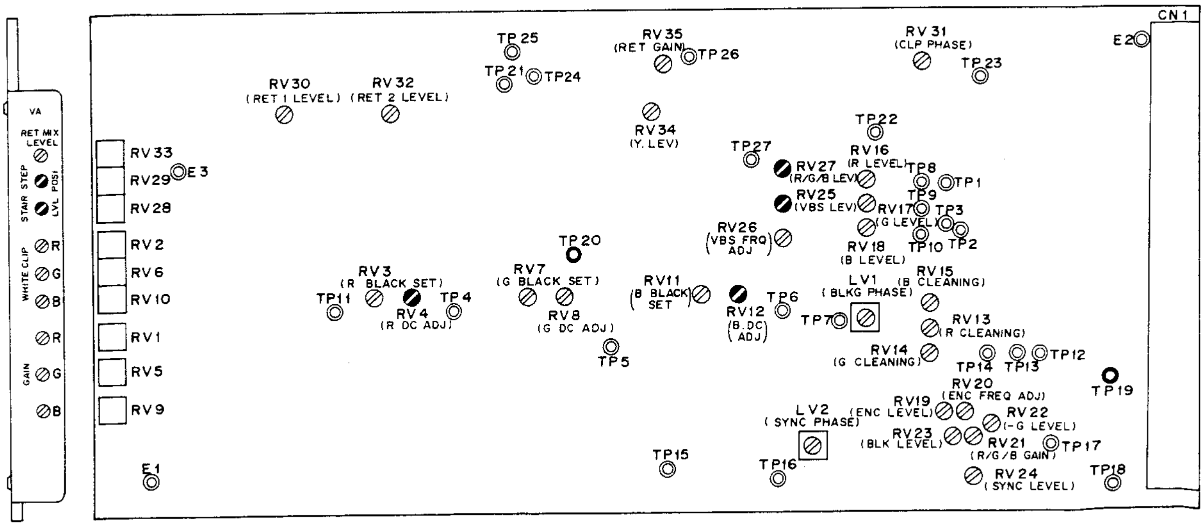
Note: Above specifications are not always satisfied for every waveform monitors.
So it is necessary to readjust ⊘ RV28 and ⊘ RV29 according to each characteristic of Waveform monitor.

5-5-8. DC Level Adjustment

Measuring : Oscilloscope
Test Point : TP19
Adj. Point : ⊘RV4, ⊘RV12

1. Adjust ⊘RV4 and ⊘RV12 so that the amplitude of black level is minimised.





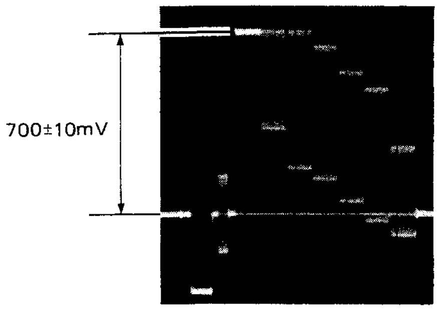
CN1
E2
RV35
(RET GAIN)
TP26
RV31
(CLP PHASE)
TP23
TP25
TP21
TP24
RV30
(RET 1 LEVEL)
RV32
(RET 2 LEVEL)
RV34
(Y. LEV)
TP22
TP27
RV16
(R LEVEL)
TP8
TP1
RV27
(R/G/B LEV)
RV25
(VBS LEV)
TP9
RV17
TP3
(G LEVEL)
RV26
(VBS FRQ ADJ)
RV18
(B LEVEL)
TP10
TP2
TP20
VA
RET MIX LEVEL
STAIR STEP
POSI
LVL
WHITE CLIP
R
G
B
GAIN
R
G
B
RV33
RV29
E3
RV28
RV2
RV6
RV10
RV1
RV5
RV9
RV3
(R BLACK SET)
TP11
RV4
(R DC ADJ)
TP4
RV7
(G BLACK SET)
RV8
(G DC ADJ)
TP5
RV11
(B BLACK SET)
RV12
(B.DC ADJ)
TP6
TP7
LV1
(BLKG PHASE)
RV15
(B CLEANING)
RV13
(R CLEANING)
RV14
(G CLEANING)
TP14
TP13
TP12
TP19
RV20
(ENC FREQ ADJ)
RV19
(ENC LEVEL)
RV22
(-G LEVEL)
LV2
(SYNC PHASE)
RV23
(BLK LEVEL)
RV21
(R/G/B GAIN)
TP17
TP15
TP16
RV24
(SYNC LEVEL)
TP18
E1

VA−28 board (component side)

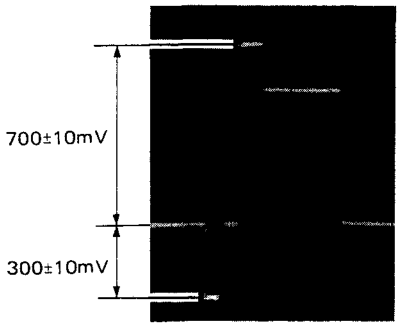
5-5-9. PIX Output Adjustment

Preparation : PICTURE/CONTROL PANEL→ENC
Measuring : Oscilloscope
Test Point : TP18
Adj. Point : ⊘RV19, ⊘RV21, ⊘RV22, ⊘RV23, ⊘RV24

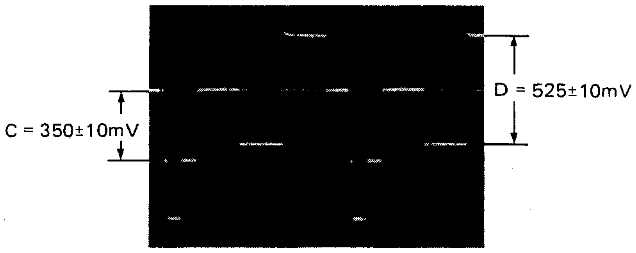
1. Adjust ⊘ RV19 so that the white peak level at TP18 is 700±10 mV.



2. PICTURE/CONTROL PANEL→G
3. Adjust ⊘ RV21 so that the white level is 700±10 mV.
4. Adjust ⊘ RV24 so that the SYNC level is 300±10 mV.

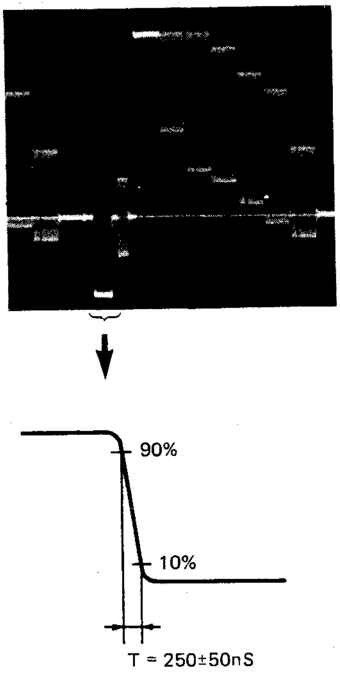


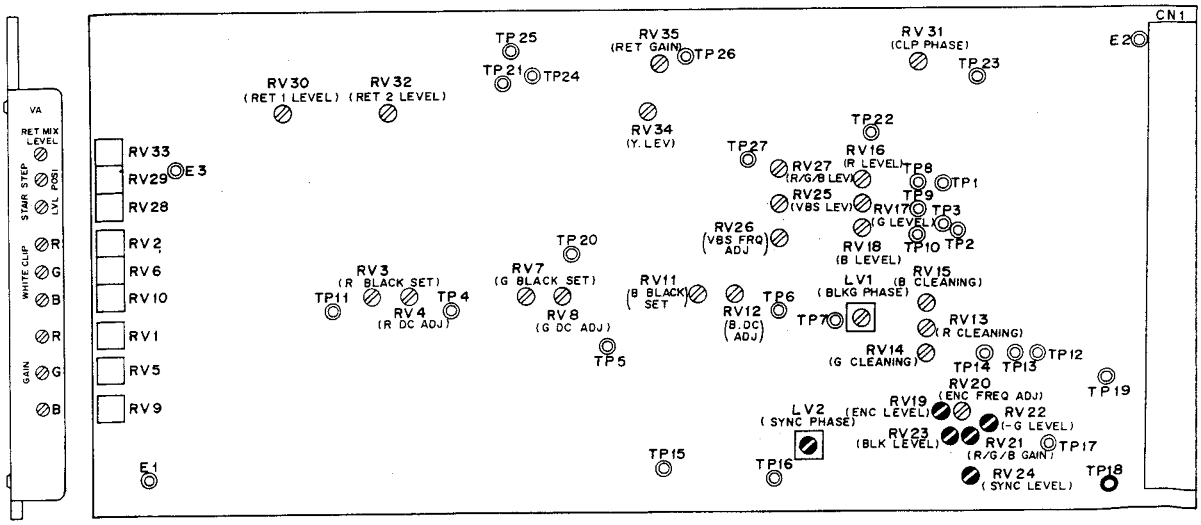
5. PICTURE/CONTROL PANEL→R, -G
6. Adjust ⊘ RV23 so that the level C is 350±10 mV.
7. Adjust ⊘ RV22 so that the level D is 525±10 mV.



5-5-10. PIX SYNC Phase Adjustment

Preparation : PICTURE /CONTROL PANEL (BKP-3601)→ENC
Measuring : Oscilloscope
Test Point : TP18
Adj. Point : ⊘ LV2
Spec. : T=250±50 nS

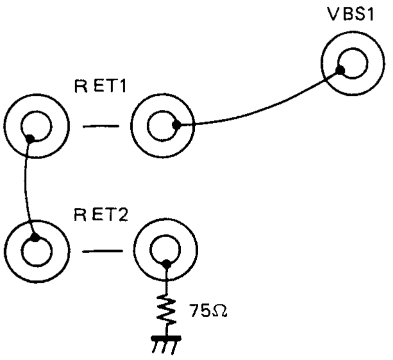

90%
10%
T = 250±50nS


CN1
E2
E1
E3
VA
RET MIX LEVEL
STAIR STEP
LVL
POSI
WHITE CLIP
R
G
B
GAIN
R
G
B
RV33
RV29
RV28
RV2
RV6
RV10
RV1
RV5
RV9
RV30 (RET 1 LEVEL)
RV32 (RET 2 LEVEL)
TP25
TP21
TP24
RV35 (RET GAIN)
TP26
RV34 (Y. LEV)
RV31 (CLP PHASE)
TP23
TP22
TP27
RV16 (R LEVEL)
TP8
TP1
RV27 (R/G/B LEV)
RV25 (VBS LEV)
TP9
RV17
TP3
(G LEVEL)
RV26 (VBS FRQ ADJ)
RV18 (B LEVEL)
TP10
TP2
TP20
RV3 (R BLACK SET)
TP11
TP4
RV4 (R DC ADJ)
RV7 (G BLACK SET)
RV8 (G DC ADJ)
TP5
RV11 (B BLACK SET)
RV12 (B.DC ADJ)
TP6
LV1 (BLKG PHASE)
TP7
RV15 (B CLEANING)
RV13 (R CLEANING)
RV14 (G CLEANING)
TP14
TP13
TP12
TP19
RV20 (ENC FREQ ADJ)
RV19 (ENC LEVEL)
RV22 (-G LEVEL)
LV2 (SYNC PHASE)
RV23 (BLK LEVEL)
RV21 (R/G/B GAIN)
TP17
TP15
TP16
RV24 (SYNC LEVEL)
TP18

VA-28 board (component side)

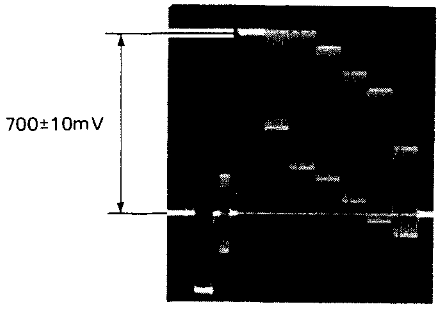
5-5-11. Return Video Adjustment

Preparation : Connect the output terminals on the rear panel as follows.
RET 1/rear panel of BVP-360P→ON

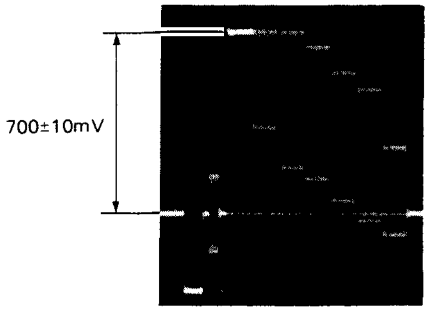


Measuring : Oscilloscope
Test Point : CH1→TP22
CH2→TP23
Adj. Point : ⊘RV30, ⊘RV31, ⊘RV32, ⊘RV33, ⊘RV34, ⊘RV35

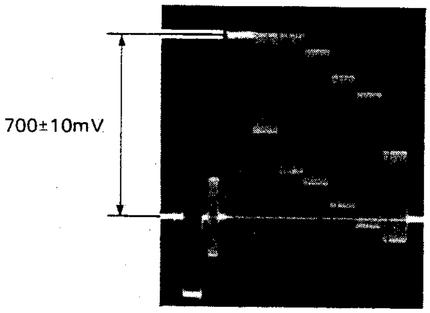
1. Adjust ⊘RV30 so that the white peak level at TP22 is 700±10 mV.



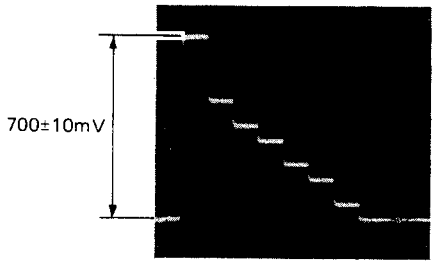
2. RET 1/rear panel of BVP-360P→OFF
   RET 2/rear panel of BVP-360P→ON
3. Adjust ⊘RV32 so that the white peak level at TP22 is 700±10 mV.



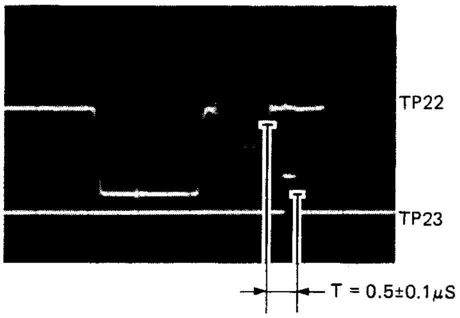
4. MIX VF/blank panel of BVP-360P→ON
   ⊘RV33→fully counterclockwise ↺
5. Adjust ⊘RV35 so that the white peak level at TP22 is 700±10 mV.

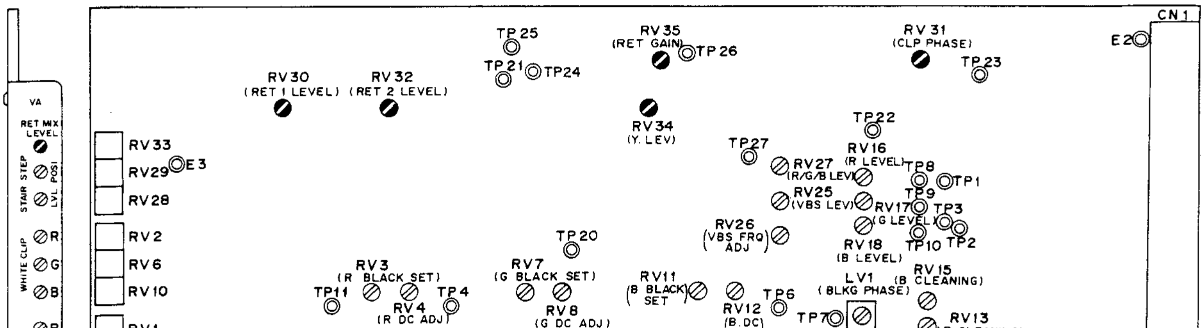


6. ⊘RV33→fully clockwise ↻
7. Adjust ⊘RV34 so that the white peak level at TP22 is 700±10 mV.



8. ⊘RV33→fully counterclockwise ↺
9. Adjust ⊘RV31 so that T is 0.5±0.1 μS.




VA
RET MIX LEVEL
STAIR STEP
POSI
LVL
WHITE CLIP
R
G
B
GAIN
R
G
B
RV33
RV29
E3
RV28
RV2
RV6
RV10
RV1
RV5
RV9
E1
RV30
(RET 1 LEVEL)
RV32
(RET 2 LEVEL)
TP25
TP21
TP24
RV35
(RET GAIN)
TP26
RV34
(Y. LEV)
RV31
(CLP PHASE)
TP23
E2
CN1
TP22
TP27
RV16
(R LEVEL)
RV27
(R/G/B LEV)
TP8
TP1
RV25
(VBS LEV)
TP9
RV17
(G LEVEL)
TP3
TP10
TP2
RV26
(VBS FRQ ADJ)
RV18
(B LEVEL)
TP20
RV3
(R BLACK SET)
TP11
TP4
RV4
(R DC ADJ)
RV7
(G BLACK SET)
RV8
(G DC ADJ)
TP5
RV11
(B BLACK SET)
RV12
(B.DC ADJ)
TP6
LV1
(BLKG PHASE)
TP7
RV15
(B CLEANING)
RV13
(R CLEANING)
RV14
(G CLEANING)
TP14
TP13
TP12
TP19
RV20
(ENC FREQ ADJ)
RV19
(ENC LEVEL)
RV22
(-G LEVEL)
LV2
(SYNC PHASE)
RV23
(BLK LEVEL)
RV21
(R/G/B GAIN)
TP17
RV24
(SYNC LEVEL)
TP18
TP15
TP16

VA-28 board (component side)